Eicon 1550/1551 WAN Router

User's Guide

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Overview

Thank you for purchasing the Eicon 1550 or Eicon 1551 WAN Router. Eicon 1550/1551 WAN Routers are intelligent, multi-protocol routers capable of connecting IP-based Ethernet devices to leased-line PPP, Frame Relay Connections, or Wide Area Networks via X.25. As configuration is performed through a web browser, the Eicon 1550/1551 is very easy to use and configure.

Hardware Features

The Eicon 1550/1551 features a 36-pin VHSI (Very High Speed Interface) port, that supports V.24 /RS-232, V.35, V.36/RS-449, X.21 and EIA-530 interfaces. The intelligent controller on the Eicon 1550/1551 detects the type of cable connected to the VHSI port and the actual board configuration, and then selects the matching interface.

The Eicon 1550/1551 is equipped with four Ethernet ports. You may connect up to four network devices (computers, printers, etc.) and in doing so, create your own local area network. You can also connect one of the Ethernet ports to a hub in order to accommodate more than four devices.

ISDN Port (Eicon 1551 only)

The Eicon 1551 is also equipped with an ISDN port, designed to be used as a backup in case the VHSI connection fails. More than one backup connection can be configured.

Upgradable Firmware

The Eicon 1550/1551's firmware (a set of software instructions that tells the device how to operate) is stored in flash memory on the device. This makes it easy to upgrade the firmware when new versions become available.

Ease of Use

Changing settings is a straight-forward process, as parameters are accessed via a web browser. You can also make changes using the command line interface, which is accessed using a telnet application through the Ethernet connection.

About this Guide

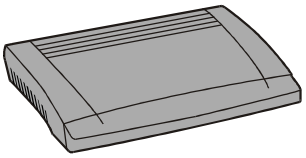
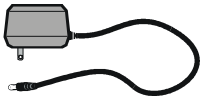
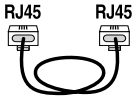
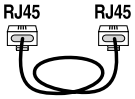
This guide describes how to install and configure the Eicon 1550/1551 on any computer capable of supporting an Ethernet card and TCP/IP. The installation instructions complement those found in the Quickstart Guide, which is also included with your package.

Note, however, that it is presumed that the user is familiar with the configuration and function of X.25, PPP, networking, and other related fields. If you are unsure of how to configure the device, consult your network administrator.

For instructions on setting up communications protocols and using applications that access the external network, consult the documentation provided with your software.

Package Contents

Your package should contain the following:

Eicon 1550/1551 	**Power Adapter (country specific)** 
Straight-through Ethernet Cable (Blue) 	**ISDN Cable (Grey) (Eicon 1551 only)** 
Quickstart Guide 	**Eicon 1550/1551 CD-ROM**

VHSI cables are not included with your Eicon 1550/1551. Cables can be ordered from Eicon Networks, or you can build your own (see **Selecting an Interface Cable** on page 129).

Note: *The blue cable is a straight-through Ethernet cable and is used to connect the Eicon 1550/1551 to a single computer. To connect to a network hub, a crossover cable (not included) is required.*

About the Eicon 1550/1551 CD-ROM

The Eicon 1550/1551 CD-ROM contains the following:

- User's Guide in PDF and HTML formats.
- Quickstart in PDF format.
- Release notes in text format.
- Installers for Adobe Acrobat Reader (for reading PDF files) and Microsoft Internet Explorer, along with other software.

Specifications

Hardware Features

- VHSI (Very High Speed Interface) synchronous port
- ISDN port (for backup purposes) (Eicon 1551 only)
- Four-port 10BaseT Ethernet hub (RJ45)
- Console port (DB9 V.24 serial interface)
- Power jack
- Hard Reset button
- Indicator lights
- Flash memory for firmware upgrade (if available)

VHSI Port (Synchronous)

- 36-pin high-density D-type connector
- Auto-detection of the following interface types:
  – V.24/EIA RS-232-C
  – V.35
  – V.36/RS-449
  – X.21
  – EIA-530
- Speeds: 2400 bps to 2048 Kbps, depending on interface
- Protocol support: PPP, X.25, Frame Relay

ISDN Port (Eicon 1551 only)

- The ISDN port (RJ-45**)** is designed to be used as a backup connection in case the VHSI port connection is unavailable.
- ISDN switches supported:
  – Europe: EuroISDN, UK (British Telecom), TPH (Microlink (TPH1962/TS013)), Japan (INS-Net64), China ISDN, Singapore ISDN.
- Protocols:
  – PPP
  – Multilink PPP (two channels used for every connection)
  – Multilink PPP with BACP (two channels used only when necessary)
- Compression: Ascend, MPPP, MS-STAC, STAC1, and STAC3.
- Authentication: PAP/CHAP, MS-CHAP.
- Connectivity timers can restrict usage of ISDN line to particular days and times.
- Usage limits can be set based on number of calls or time connected.
- Incoming calls supported.

Indicator Lights

- Power status
- VHSI port status
- Ethernet port status (four) and collision detection
- ISDN B-channel status (B1 and B2 on one light) (Eicon 1551 only)
- ISDN D-channel status (Eicon 1551 only)
- ISDN Link status (Eicon 1551 only)
- Console port status

Protocol Support

- PPP:
  – PPP compression: Hi/fn STAC, Microsoft MPPC, CCP
  – Security: PAP, CHAP, MS-CHAP
  – Authentication

- X.25:
  – CCITT/ITU compliance: X.25, X.32, and X.121 (1984)
  – Up to 32 simultaneous X.25 virtual circuits (includes PVCs and SVCs)
- Frame Relay:
  – IP over Frame Relay (RFC 2427)
  – Maximum of 8 DLCI
  – Routing between DLCI
  – Congestion management (FECN, BENC)
  – Extended LSN
  – Automatic LMI detection
  – Congestion control (FECN & BECN)
  – Frame Relay compression (FRF.9)

IP Protocol Support

- Network Address Translation (NAT)
- IP routing (dynamic and static)
- IP spoofing and packet filtering
- DHCP Server and DHCP Relay Agent
- SNMP, TFTP, Telnet, DNS, RIP-1, RIP-2

Environmental Requirements

- Operating temperature: 0°C to +50°C
- Storage temperature: -20°C to +70°C
- Operating humidity: 0 to 90% (non-condensing)

Power Requirements

- External AC wall mount adapter providing 9-15VDC/1A
- Power consumption: 5 Watts maximum

Warranty

- Five years

Management Utilities

- Web-based configuration interface
- Command line interface

Packaging Contents

- Eicon 1550/1551 WAN Router
- Straight-through Ethernet cable (blue)
- ISDN cable (grey) (Eicon 1551 only)
- Quickstart Guide
- Eicon 1550/1551 CD-ROM (contains utilities, documentation)
- Country-specific power adapter

Note: *VHSI cables are not included with your Eicon 1550/1551. Cables can be ordered from Eicon Networks, or you can build your own (see* ***Interface Cable Specifications*** *on page 131**).*

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System Requirements

This chapter describes how to connect a single computer to the Eicon 1550/1551. Before you begin, review the system requirements, as outlined below.
For LAN setup instructions, see **LAN Setup** on page 30.

Networking Requirements

When connecting the Eicon 1550/1551 directly to a computer, the following is required:

- A 10Base-T Ethernet network interface card, properly installed and configured to use the TCP/IP protocol. A 100 Mbps Ethernet card can be used if the card supports auto-sensing.
- TCP/IP communications protocol configured to obtain its IP address automatically (DHCP client), and not configured to use a DNS server.

If you are unsure about these topics, consult the documentation for your operating system or network adapter for more information.

Web Browser Requirements

The Eicon 1550/1551 is configured via web pages stored on the device itself. To access the web interface, you must have Netscape Navigator 4 or Microsoft Internet Explorer 4, or later versions.

Additionally, your Web browser must be configured to connect to the Internet via a local area network (LAN) and not through a proxy server.

An installer for Microsoft Internet Explorer is included on the Eicon 1550/551 CD-ROM for all Windows operating systems except Windows 3.1. Windows NT 4.0 requires SP3 or later, available from http://www.microsoft.com/.

Configuration Worksheets

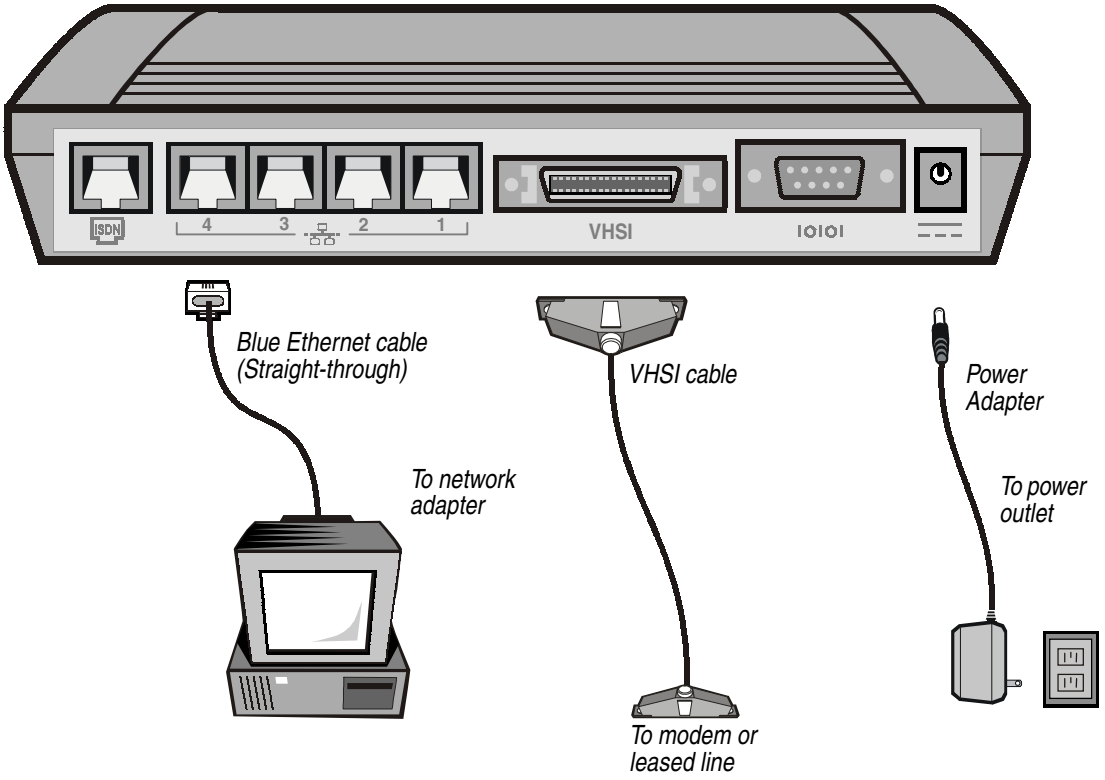
You may find the configuration worksheets, included in this guide, helpful for configuring your settings. See **Configuration Worksheets** on page 142 for more information.

Step 1: Connect the Cables

This procedure will describe how to connect one computer to the Eicon 1550/1551, once the set-up is running correctly. You can then connect up to three other LAN devices.

Your Eicon 1550/1551 package includes one Ethernet cable (the blue cable). This is a standard, straight-through cable. If you plan to connect more than one computer to the Eicon 1550/1551, you will need to acquire a separate standard Ethernet cable for each piece of equipment.

Installation Diagram



Procedure

Leave your computer on during installation.

1. **Connect the power adapter.**

   When connected, the Power indicator light (on the front of the device) should turn on.

2. **Connect your VHSI cable.**

   Connect the appropriate end of the cable to the VHSI port of the Eicon 1550/1551 then connect the other end to your modem or leased line connector.

   Note: ***VHSI cables are not included with your Eicon 1550/1551. Cables can be ordered from Eicon Networks, or you can build your own (see Interface Cable Specifications on page 131).***

3. **Connect the blue Ethernet cable.**

   This cable plugs into the Ethernet port of your computer. Plug the other end into any of the Ethernet ports on the Eicon 1550/1551. It does not matter which Ethernet port you use.

   Once connected, the Ethernet status light for the connected port should light up, indicating that the Ethernet cable is connected properly.

4. **Verify your TCP/IP settings, if required.**

   TCP/IP for your Ethernet card should be configured to acquire its IP address from a DHCP server.

   Ethernet cards are normally set this way by default. See **Changing TCP/IP Settings to DHCP** on page 35 for details on how to do this, or consult the help included with your operating system.

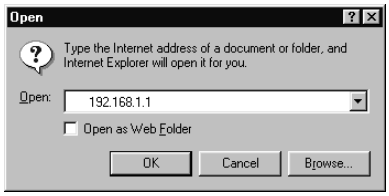
5. Restart your computer.

6. To continue, see **Step 2: Log in to the Eicon 1550/1551** on page 16.

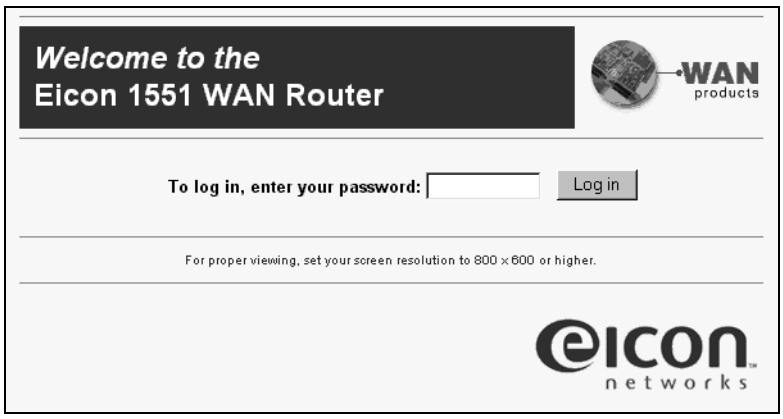
Step 2: Log in to the Eicon 1550/1551

Whenever you wish to change settings on the Eicon 1550/1551, you must first log in using a web browser, as shown below.

1. Launch your web browser.
2. Click ‘File’, ‘Open’, then enter the following IP address:
   192.168.1.1



3. Click ‘OK’. You should see the ‘Log in’ page.

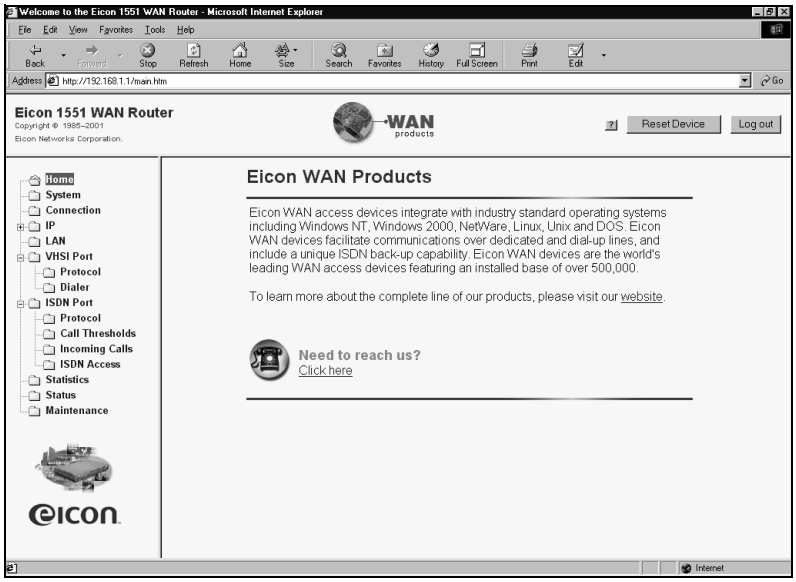


Note: ***If you do not see the ‘Log in’ page, see Troubleshooting on page 17.***

4. Click the ‘Log in’ button.

Note: ***By default there is no password.***

5. The main menu should appear, as shown below.


Welcome to the Eicon 1551 WAN Router - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Size Search Favorites History Full Screen Print Edit
Address http://192.168.1.1/main.htm
Go
Eicon 1551 WAN Router
Copyright © 1985–2001
Eicon Networks Corporation.
WAN products
Reset Device
Log out
Home
System
Connection
IP
LAN
VHSI Port
Protocol
Dialer
ISDN Port
Protocol
Call Thresholds
Incoming Calls
ISDN Access
Statistics
Status
Maintenance
Eicon WAN Products
Eicon WAN access devices integrate with industry standard operating systems including Windows NT, Windows 2000, NetWare, Linux, Unix and DOS. Eicon WAN devices facilitate communications over dedicated and dial-up lines, and include a unique ISDN back-up capability. Eicon WAN devices are the world's leading WAN access devices featuring an installed base of over 500,000.
To learn more about the complete line of our products, please visit our website.
Need to reach us?
Click here
eicon
Internet

6. See **Step 3: Select the VHSI Protocol** on page 19.

Troubleshooting

If you cannot access the ‘Log in’ page:

- Verify that all cables are connected properly. The power and Ethernet lights should be on.
- Verify that your web browser is configured to use the LAN and not a dial-up connection, and that your browser is not set to use a proxy server. See **Adjusting Browser Settings** (below) for instructions on how to do this.
- Verify that your network adapter is set to acquire its IP address automatically. See **Changing TCP/IP Settings to DHCP** for more information. Restart your computer and try again.

Adjusting Browser Settings

If you are not able to access the configuration pages, verify your browser settings as described below. Note that the steps may vary slightly depending on the browser version used.

- Internet Explorer version 5 or later:
  – From the ‘Tools’ menu, select ‘Internet Options’, click the ‘Connections’ tab, then click ‘Setup’.
  – Select the option ‘I want to set up my Internet connection manually’, then click ‘Next’.
  – Select ‘I want to connect through a local area network’, then click ‘Next’.
  – Clear all proxy options, then click ‘Next’.
  – Clear the option ‘Connect to the Internet immediately’, then click ‘Finish’.

- Internet Explorer previous to version 5:
  – From the ‘View’ menu, select ‘Internet Options’, then click the ‘Connection’ tab.
  – Verify that ‘Connect to the internet using a local area network’ is enabled.
  – Verify that the ‘Proxy Server’ option is disabled.

- Netscape Navigator (do one of the following):
  – Under Options, click ‘Network Preferences’, then ‘Proxies’. Verify that the ‘No Proxies’ option is selected.
  – Under the ‘Edit’ menu, click ‘Preferences’, ‘Advanced’, then ‘Proxies’. Verify that the ‘Direct Connection to the Internet’ is enabled.

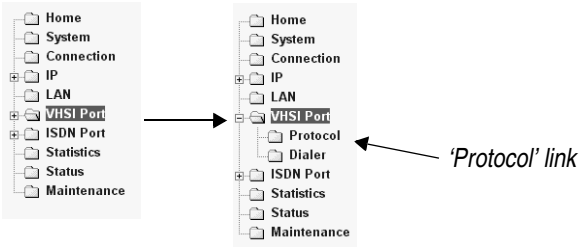
Once you are finished making changes, click ‘OK’, then retry accessing the web configuration pages.

Step 3: Select the VHSI Protocol

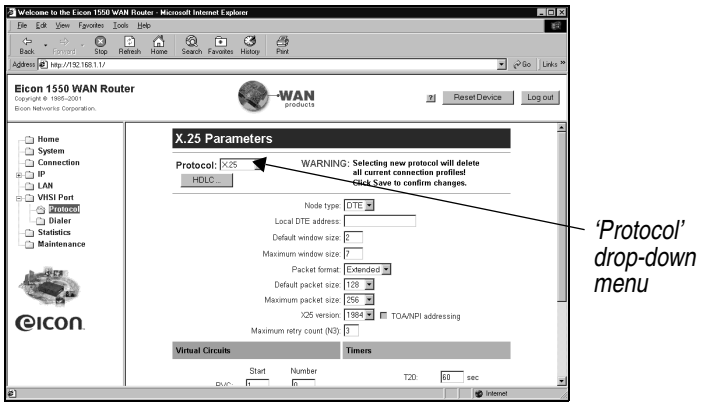
Before you begin creating connection profiles, including any backup profiles, you should verify the protocol setting for the VHSI port (set to 'X.25' by default). This is due to the fact that **all connection profiles are deleted** when the protocol is changed.

Note: *Configuration settings can be saved to a file on your hard drive. This is useful if you have many connection profiles already defined but need to change the VHSI protocol. See* ***Saving and Resetting Configuration Settings*** *on page 46 for more information.*

1. From the menu (at the left of the screen), click on the small '+' next to 'VHSI Port' to expand the VHSI Port group, then click the 'Protocol' link.



2. From the 'Protocol' drop-down menu, select a protocol.



3. If you changed the protocol, click the 'Save' button, located at the bottom right of the web page, when finished. You may have to scroll down in order to locate the button.

Note: ***If you do not click 'Save', the changes will be lost when you move to another page.***

Step 4: Create Profiles

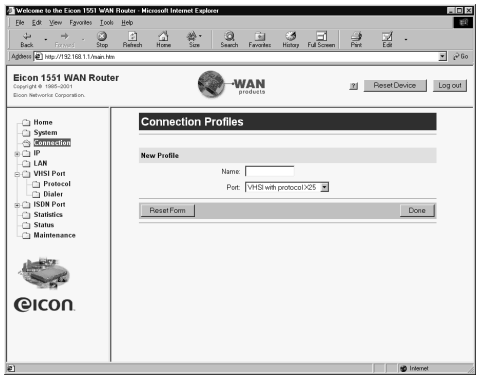
Settings for particular connections are contained in profiles on the Eicon 1550/1551.

Note: *When you change protocols for the VHSI interface, all profile information is lost. To avoid having to re-enter configuration information, choose the protocol first, as described in* ***Step 3: Select the VHSI Protocol*** *on page 19.*

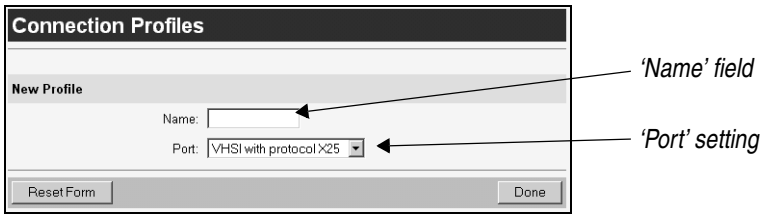
As profiles contain many settings, you may find it useful to fill out the **Configuration Worksheets** on page 142 in order to determine your settings before making changes.

Creating a Profile

1. From the menu, click the 'Connection' link. The 'Connection Profiles' page appears. As no profiles yet exist, the only section on this page is an area to create a new profile.

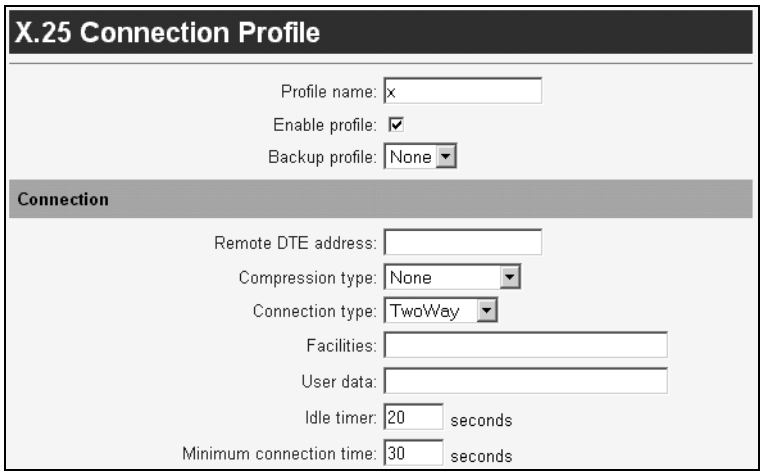


2. To add a profile, enter the name in the 'Name' field, select the port, then click the 'Done' button.



Note: ***The ISDN port (available on the Eicon 1551 only) is used mainly for backup purposes.***

3. The settings for your new profile will be displayed, along with configuration parameters. The parameters available will differ depending on the protocol used. For more information, see **Creating and Editing Profiles** on page 49.



4. Make the required changes to the profile. Be sure to scroll down and inspect all parameters.

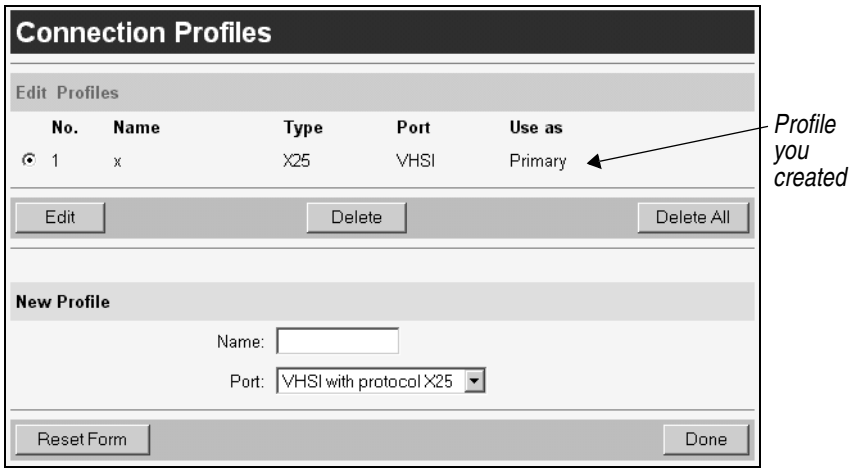
   Note: ***On line help is available by clicking on the setting names (in blue).***

5. Click the 'Save' button (located at the bottom right of the page) when finished.

   Note: ***If you do not click 'Save', the changes will be lost when you move to another page.***

Creating more profiles, or editing existing profiles

To create another profile, click on the 'Connection' link at the left of the screen. The new 'Connections' page will appear. Existing profiles will be listed at the top.



- To edit an existing profile, click on the radio button to the left of the profile, then click 'Edit'.
- To delete a profile, click on the radio button to the left of the profile, then click 'Delete'.
- The 'New Profile' section will be located at the bottom of the profiles list. To create a new profile, enter the name for the new profile, choose the port, and click 'Done'.

Limits on Creating Profiles

If the VHSI protocol is set to X.25, you can create up to 32 connection profiles. When set to Frame Relay, you can create up to eight connection profiles. When using PPP as the VHSI port protocol, you may only create one profile.

Note: *It is **not** recommended to mix Frame Relay and X.25 profiles. It is recommended that you either create all X.25 (with or without ISDN) **or** all Frame Relay (with or without ISDN) profiles.*

With the Eicon 1551, you can also create up to two ISDN profiles. However, the maximum number of profiles for both X.25 and ISDN combined is still 32. This means, that, if you create two ISDN profiles, you are then limited to 30 X.25 profiles.

If you are using PPP for the VHSI port, you can still create two ISDN profiles along with the single PPP/VHSI profile.

What's Next?

See **Step 5: Modify Other Settings** on page 23.

Step 5: Modify Other Settings

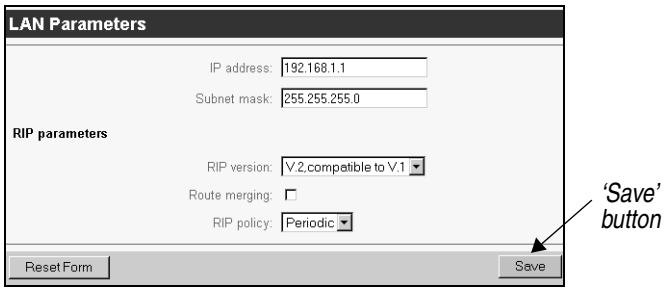
Changes that you have made thus far do not take effect until you reset the device. However, it is strongly recommended that you check other device settings to ensure that they correspond to your network situation.

Specifically, you should inspect the following pages:

- All VHSI Port settings. The 'VHSI Port' group of settings includes the 'VHSI Port' link itself, the 'Protocol' page (which includes a second page, 'HDLC', when the protocol is set to X.25, or 'Static DLCI', when the protocol is set to Frame Relay), and the 'Dialer' page.
- ISDN Port settings. If you have an Eicon 1551 and you have selected 'ISDN' as the port for a profile, inspect the 'ISDN Port' and 'Protocol' pages.

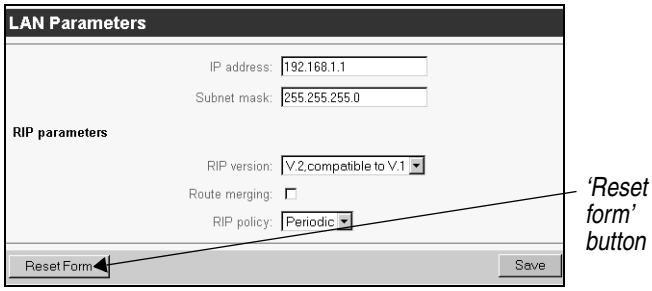
As you will be moving back and forth between pages of settings, please take note of the following:

- **When making changes using the web interface, make sure to click the 'Save' button on each page.** The 'Save' button is located at the bottom right of each web page. If you move to another page without saving, your changes will **not** be saved to the device.

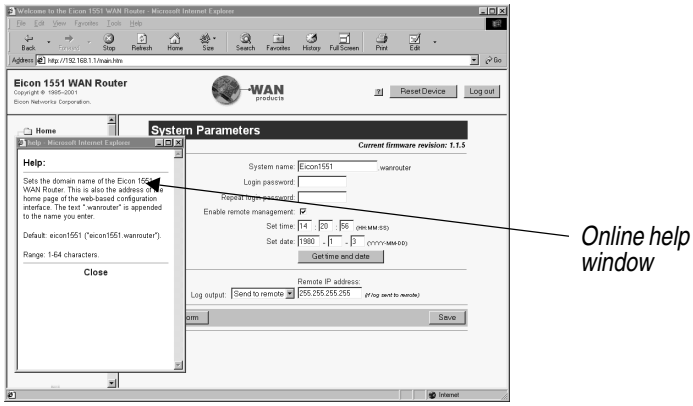


  Once saved, the new settings will not take effect until you reset the device. It is not necessary to do a reset until you have completed all the steps in the setup.

- The 'Reset Form' button, located at the bottom left of each page, reverts all settings in the current page back to the original values when the page was opened.



- Clicking a setting name displays context-sensitive help.

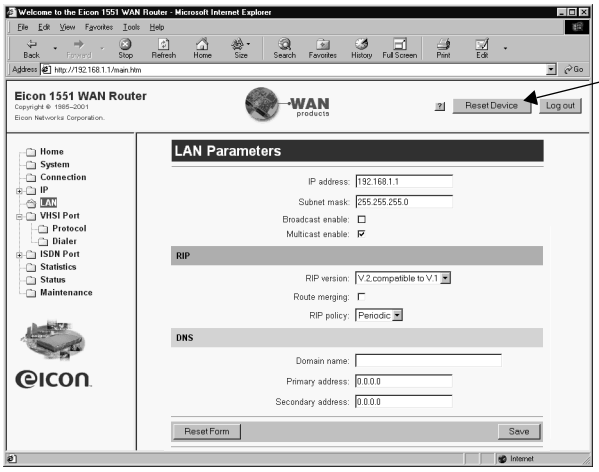


What's Next?

See **Step 6: Reset the Device and Test WAN Access** on page 25.

Step 6: Reset the Device and Test WAN Access

For your settings to take effect, you must reset the device by clicking the ‘Reset Device’ button at the top of the browser window.



Once you have reset the device, test that you have access to the remote device using your WAN application. You can also ping the remote device to which you are attempting to connect.

When the VHSI connection is working properly, the VHSI port indicator light should stay solid. However, note that this light blinks when data is being transmitted over the VHSI port.

Troubleshooting

If you cannot access the WAN:

- Check your configuration settings, starting with **Step 3: Select the VHSI Protocol** on page 19. Verify that your settings are consistent with those of your network provider.
- Verify that your TCP/IP settings are correct for your situation (DHCP client or static IP address) and that you have restarted your computer. If you cannot access the ‘Log in’ page again, follow the instructions and suggestions given in **Troubleshooting** on page 17.

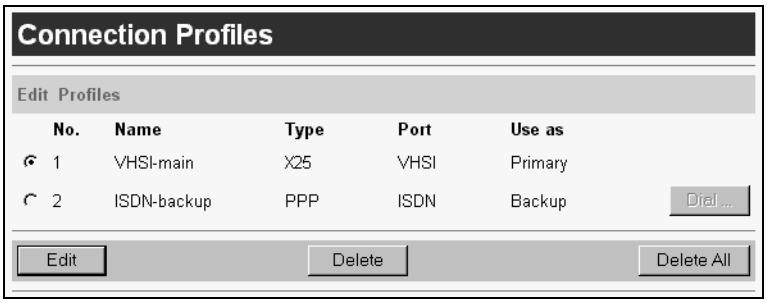
What’s Next?

- To learn more about your Eicon 1550/1551, see **Using your Eicon 1550/1551** on page 38.

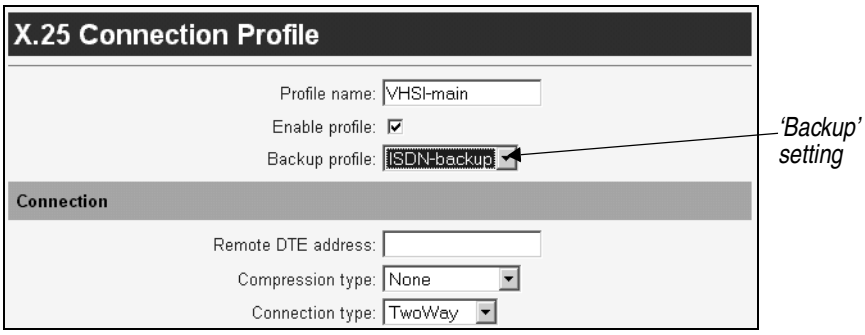
Creating a Backup Profile

The ISDN port on the Eicon 1551 is designed to act as a backup connection in case the VHSI connection is unavailable. However, any profile, including a separate VHSI connection profile, can act as a backup for any other profile.

The following example demonstrates a simple scenario on the Eicon 1551.
Two profiles have been created: VHSI-main and ISDN-backup.



On the profile page for ‘VHSI-main’, the profile ‘ISDN-backup’ has been defined as the backup profile for ‘VHSI-main’.



Additionally, you could assign a backup profile to ‘ISDN-backup’ in case that connection is unavailable. It could be another ISDN profile or a VHSI profile.

ISDN Port Setup

This section describes how to configure the ISDN port on the Eicon 1551. This port was designed to act as a backup port in case the main VHSI connection becomes unavailable.

Connecting the ISDN Cable

The gray cable included with your Eicon 1551 package is used to connect the ISDN port to your ISDN wall jack (or NT-1, depending on how your ISDN line is set up). However, any standard, straight-through RJ45-RJ45 cable can be used.

Once the ISDN cable is connected properly, the D and Link status lights (on the front of the Eicon 1551) should start flashing. This indicates that the Eicon 1551 is attempting to synchronize with the ISDN network.

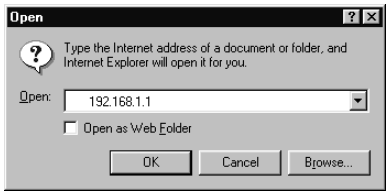
- These two lights should turn solid when synchronization is established. However, these lights may go off when the line is not in use, as many ISDN networks disconnect to conserve power.

Configuring the ISDN Line

Your ISDN provider should provide you with such information as switch type, and ISDN phone numbers. Additionally, you may want to determine what your billing intervals are in order to reduce your ISDN costs.

To configure your ISDN line:

1. Launch your web browser.
2. Click ‘File’, ‘Open’, then enter the following IP address: **192.168.1.1**



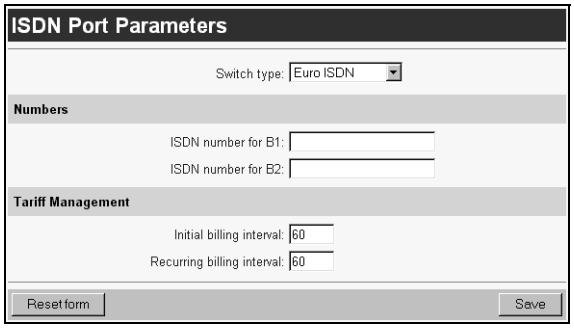
3. Click ‘OK’. You should see the ‘Log in’ page.

   Note: *If you do not see the ‘Log in’ page, see* ***Troubleshooting*** *on page 17.*

4. Click the ‘Log in’ button. The main menu should appear.

   Note: *By default there is no password.*

5. Click the ‘ISDN Port’ link to bring up the ‘ISDN Port Parameters’ page.



6. Specify the switch type.
7. Enter your ISDN phone numbers in the ‘Numbers’ area. If you only have one number, enter it in both number fields.
8. If you know the billing intervals for your ISDN line, enter them in the appropriate fields.

   The ‘Initial Billing Interval’ is the minimum amount of time you want an ISDN channel to be open. The ‘Recurring Billing Interval’ defines the minimum amount of time you want an ISDN channel open after the initial billing interval is surpassed.

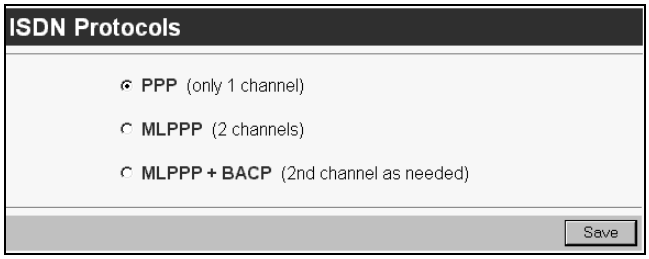
   These settings help keep the ISDN line from being opened and closed too frequently, which could reduce your ISDN charges, depending on how your provider charges for your ISDN line.

   For example, a provider may charge 25 cents to open a B-channel but only 10 cents per minute afterward. If the channel is opened and closed frequently within a few minutes, your charges for opening the channel will outweigh the charges incurred if the channel was left open.
9. Click the ‘Save’ button.

Configuring the ISDN Protocol

The connection protocol, set to ‘PPP’ by default, governs the rules by which ISDN channels are enabled and disabled. For more information on these settings, see **ISDN Menu > Protocols** on page 124.

1. Expand the ‘ISDN Port’ group of settings by clicking on the small ‘+’
2. Click on the ‘Protocol’ link. The ‘ISDN Protocol’ page will appear.



3. Click on the radio button next to your protocol of choice.
4. Click ‘Save’.

LAN Setup

To give more than four computers access to the external network, the Eicon 1550/1551 can be connected to a network hub and become part of a Local Area Network (LAN). To do this, you must use an Ethernet crossover cable (not included) to connect your hub to any of the four Ethernet ports on the Eicon 1550/1551. You can also use a standard Ethernet cable if your hub has an uplink or cascade port.

This section provides general guidelines for connecting the Eicon 1550/1551 to a LAN. Due to the wide range of networking equipment and topologies that are in use worldwide, your configuration needs may fall outside the instructions presented here. Contact your network administrator or other support person to help you with the installation.

- **Important Points** 30
- **Summary of IP Address Recommendations** 31
- **Forcing a New IP Address Request using Windows** 31
- **General Setup Procedure** 32
- **Changing the Eicon 1550/1551 LAN IP Address (if required)** 32
- **Disabling DHCP (if required)** 34
- **Adjusting Other LAN Settings (if required)** 34

Important Points

When connecting the Eicon 1550/1551 to your LAN, keep in mind the following important points.

- The Eicon 1550/1551 has a built-in DHCP server that is on by default. When a computer on the LAN requests an IP address, the Eicon 1550/1551 will respond automatically. However, if the Eicon 1550/1551 detects an existing DHCP server on your LAN, its own DHCP services will be deactivated. To re-activate DHCP in this case, disable the existing DHCP server and press the Eicon 1550/1551's reset button.
- The Eicon 1550/1551 has a default LAN IP address of 192.168.1.1. When you attempt to access the Eicon 1550/1551 over the LAN for the first time, your computer's network adapter must have an IP address that is on the same subnet as the Eicon 1550/1551's default IP address, i.e., you must have the IP address 192.168.1.2, or 192.168.1.3, etc.

  If you are using the Eicon 1550/1551 as a DHCP server, your computer must be set to acquire its IP address automatically. You must then force your computer to request a new IP address (see **Forcing a New IP Address Request using Windows** on page 31 for more information).

  If you have an existing DHCP server, you must manually change the IP address of the computer you are using to configure the device to 192.168.1.2 (or .3, .4, etc.) in order to make the initial contact with the Eicon 1550/1551. This is a temporary change. Once the Eicon 1550/1551 is configured, you can change your computer's IP settings back to their original state.

  See **Summary of IP Address Recommendations** on page 31 for more information.

- Once you have contacted the Eicon 1550/1551, you should first change the LAN IP address (set to 192.168.1.1 by default) of the Eicon 1550/1551 to an IP address that is appropriate for your LAN. Depending on your LAN requirements, this may or may not be necessary.

  For example, if the Eicon 1550/1551 will be acting as your DHCP server, it is probably not necessary to change the device's LAN IP address, as all computers making DHCP requests will be given a 192.168.1.x IP address. However, if you have an existing DHCP server, the Eicon 1550/1551 should be assigned an IP address that is on the same subnet as the dynamically assigned IP addresses; this IP address should also be outside the range of IP addresses dynamically assigned to other devices on the network. You may also need to change the LAN IP address if your computers are assigned static IP addresses.
- If you have any difficulty accessing the Eicon 1550/1551 over the LAN, it is recommended that you connect the Eicon 1550/1551 directly to a single computer for initial configuration as described at the beginning of this chapter.

Summary of IP Address Recommendations

This is a summary of suggestions when setting the IP address of your computer.

- Set your Ethernet card to acquire its IP address **dynamically** (DHCP client) if:
  – You are installing on a LAN and wish to use the Eicon 1550/1551 as your DHCP server. The Eicon 1550/1551, which has a built-in DHCP server, will assign an IP address to your computer's Ethernet card. Most network cards are configured this way by default.
- Set the IP address of your Ethernet card to the address **192.168.1.2** (or .3, .4, etc.) and subnet mask to 255.255.255.0, with the default gateway left blank, if:
  – Your LAN already has an existing DHCP server.
  – Your LAN uses static IP addressing.

  By changing your IP address and subnet mask to these values, you are ensuring that your computer is on the same subnet as the Eicon 1550/1551, whose IP address is 192.168.1.1 by default. Later you will change the Eicon 1550/1551's IP address to one more appropriate for your LAN.

Note: *For information on changing TCP/IP settings, see* ***Changing TCP/IP Settings to DHCP****, or consult the documentation included with your operating system.*

Forcing a New IP Address Request using Windows

If you are using the Eicon 1550/1551 as a DHCP server on your LAN, or if you have connected the Eicon 1550/1551 to a single computer, restarting will force your computer to acquire a new IP address. Depending on the operating system, you are required to restart your computer anyway, when the TCP/IP settings have been changed (Windows 95 for example).

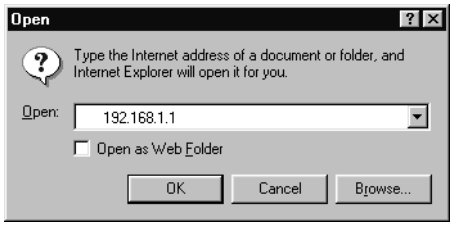
If your computer is already set to acquire its IP address dynamically, and if you are using Windows, you can also do the following to request a new IP address:

- Windows 95/98/Me: Click 'Start', 'Run', type 'winipcfg', and click 'OK'. Click 'Renew All'.
- Windows NT/2000/XP: Launch a DOS prompt, type 'ipconfig /release' and press Enter, then 'ipconfig /renew' and press Enter.

General Setup Procedure

The following is a general setup procedure for connecting the Eicon 1550/1551 to a LAN.

1. Connect the power adapter and VHSI cable as described in **Step 1: Connect the Cables** on page 14.
2. Using an Ethernet crossover cable (sold separately), connect the Eicon 1550/1551 to your network hub, if available. If your hub has an uplink or cascade port, you can also use a standard Ethernet cable (included).
3. To see if the Ethernet connection is working, check that the appropriate Ethernet light on the Eicon 1550/1551 is on (the power adapters for both devices must be plugged in).
4. Change your IP settings as described in **Important Points** on page 30. Force your computer to request a new IP address automatically, or change your IP address manually, depending on your situation. Restart your computer if required.
5. Launch your web browser. Click 'File', 'Open'. Enter **192.168.1.1** and click 'OK'.



6. You should see the 'Log in' page. Without entering a password, click 'Log in'. By default, the Eicon 1550/1551 has no password.

   Note: ***If you do not see the 'Log in' page, check your TCP/IP settings. Restart your computer if required. If you still cannot connect to the Eicon 1550/1551, connect the Eicon 1550/1551 directly to a single computer for initial configuration, as described at the beginning of this chapter.***

7. If required, modify the Eicon 1550/1551's LAN IP address to suit your LAN configuration needs. See **Changing the Eicon 1550/1551 LAN IP Address (if required)** below.

   If required, disable the Eicon 1550/1551's DHCP server. This ensures that the Eicon 1550/1551 will not respond to DHCP requests. See **Disabling DHCP (if required)** on page 34.

8. You may then continue modifying WAN settings as described earlier in this chapter, starting with **Step 3: Select the VHSI Protocol** on page 19.

Changing the Eicon 1550/1551 LAN IP Address (if required)

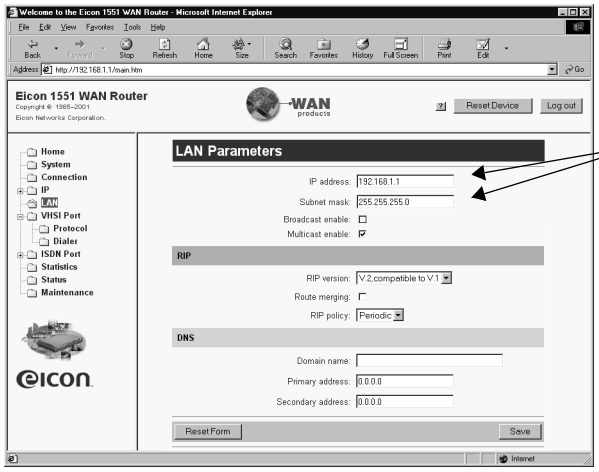
The LAN IP address should be changed if:

- **You have an existing DHCP server:** In this case, you must change the Eicon 1550/1551's IP address so it is outside the range of dynamically assigned ones, or you must reserve the address.

- **Your computers have fixed IP addresses:** In this case, you must change the Eicon 1550/1551's IP address so that it corresponds to what is available on your network. Otherwise, the Eicon 1550/1551 may not be accessible from the computers on your LAN.

To change the LAN IP address:

1. From the menu, click 'LAN'. The Eicon 1550/1551 displays the LAN parameters page.
2. Modify the 'IP address' and 'Subnet Mask' settings to addresses appropriate for your LAN.



3. Click the 'Save' button.
4. If you are using the Eicon 1550/1551 as a DHCP server, you may wish to modify the range of IP addresses dynamically assigned to network devices by the Eicon 1550/1551. To do this, click the '+' next to 'IP', click 'DHCP', modify the appropriate fields, and click 'Save'.

   If this is not done, the Eicon 1550/1551 may assign an IP address that is not on the same subnet as the LAN IP address, and the Eicon 1550/1551 will not be accessible over the LAN. However, the external network may still function properly.
5. Click the 'Reset Device' button.

   Once the device is reset, you will most likely lose contact with the Eicon 1550/1551. This is because you changed the LAN IP address of the device, and as your computer is no longer on the same subnet as the Eicon 1550/1551, the device is no longer accessible via a web browser. To remedy this, change your computer's IP address to be on the same subnet as the Eicon 1550/1551. If you are using the Eicon 1550/1551 as your DHCP server, force your computer to request a new IP address.

Disabling DHCP (if required)

If your LAN has an existing DHCP server, you should disable the Eicon 1550/1551's DHCP server. This ensures that the Eicon 1550/1551 will not respond to DHCP requests.

Note: *The Eicon 1550/1551 automatically de-activates its own DHCP server if an existing DHCP server is detected. To re-activate this feature, remove the existing server from the LAN and reset the Eicon 1550/1551.*

To disable the DHCP server:

1. In the menu, click the '+' next to 'IP', then click 'DHCP' from the submenu.
2. In the 'DHCP' page, clear the 'Enable DHCP' checkbox.
3. Click the 'Save' button.
4. Click the 'Reset Device' button.

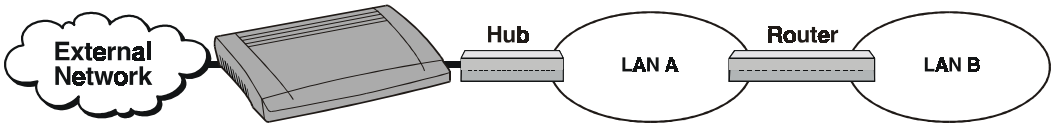
Adjusting Other LAN Settings (if required)

Depending on your setup, you may have to adjust some of the configuration settings on your computers or servers in order to communicate with the Eicon 1550/1551. Due to the diversity of networking equipment and topologies, this section can only cover the most common setups. If your setup is more complex, contact your network administrator (or other support personnel) to help with the installation.

Once you make these changes, the computers on your network may need to be restarted in order to acquire the new settings.

- **If your LAN uses static addressing:** Set the 'Default Gateway' and 'DNS Server' settings of each computer to the address of the Eicon 1550/1551. These settings are normally found in the TCP/IP settings for your operating system.
- **If your LAN has a DHCP server:** Configure your DHCP server to return the address of the Eicon 1550/1551 as the 'Default Gateway' and 'DNS Server' to all clients.
- **If your LAN has a router:** Most likely, your router is configured as the default gateway for your computers. In this case, you will need to configure the routing table on your router to re-direct the appropriate traffic to the Eicon 1550/1551, as well as add a route on the Eicon 1550/1551 to direct appropriate traffic to the router.

  Consider the following example:



Eicon 1550/1551

Traffic from LAN A addressed to LAN B is forwarded by the router to LAN B.

Traffic from LAN B addressed to the external network needs to be forwarded by the router to the Eicon 1550/1551. This requires you to configure a route on the router.

Traffic from the external network to LAN B needs to be forwarded to the router. This requires you to configure a route on the Eicon 1550/1551. No route is needed for traffic to LAN A.

Changing TCP/IP Settings to DHCP

For most connection scenarios, your computer must have TCP/IP configured to act as a DHCP client. This allows your computer to dynamically acquire its IP address and other settings from the Eicon 1550/1551.

Note: *If you do not want to use the Eicon 1550/1551's DHCP feature, you must change the IP address of your computer to 192.168.1.2, or 192.168.1.3, etc., as the default IP address of the Eicon 1550/1551 is 192.168.1.1.*

The following procedures describe how to set your TCP/IP settings for Windows 95/98/Me, Windows NT 4.0, Windows 2000/XP, and Macintosh (Mac OS 8). For other platforms, consult the documentation for your operating system.

- **TCP/IP Settings for Windows 95/98/Me** 35
- **TCP/IP Settings for Windows NT 4.0** 36
- **TCP/IP Settings for Windows 2000/XP** 36

TCP/IP Settings for Windows 95/98/Me

The following procedure describes how to verify and install TCP/IP on Windows 95 or Windows 98. Note that if you have more than one Ethernet adapter installed on your system, you must only change the settings for the adapter used by the Eicon 1550/1551.

1. Click 'Start', 'Settings', 'Control Panel'.
2. Double-click the 'Network' icon. The 'Network' dialog box appears. By default, the 'Configuration' tab is displayed.
3. If 'TCP/IP' is not listed for your network adapter in the 'Components' list, you must add it, as described below.
   - Click 'Add'. The 'Select Network Component Type' dialog box appears.
   - Select 'Protocol', then click 'Add'. The 'Select Network Protocol' window appears.
   - In the 'Manufacturer' box, select 'Microsoft'.
   - In 'Network Protocols', select 'TCP/IP'.
   - Click 'OK'. Once installation is complete, you are returned to the Network window.
   - Do not click the 'OK' button yet; next you will verify your TCP/IP settings.
4. In the list of components, select 'TCP/IP' for your network card, then click 'Properties'. The 'TCP/IP Properties' dialog box appears.
5. Click the 'IP Address' tab and select 'Obtain an IP address automatically'. This defines your machine as a DHCP client.
6. Click the 'WINS Configuration' tab and select 'Use DHCP for WINS Resolution'.
7. Click the 'Gateway' tab and remove all existing gateways.
8. Click the 'DNS Configuration' tab and select 'Disable DNS.' This instructs your computer to obtain DNS server information via DHCP.
9. Click 'OK', then click 'OK' again.

   Note: ***You may be asked to insert your original Windows installation CD-ROM.***
10. Click 'Yes' when prompted to restart your system.

TCP/IP Settings for Windows NT 4.0

The following procedure describes how to install TCP/IP on Windows NT 4.0. Note that if you have more than one Ethernet adapter installed on your system, you must only change the settings for the adapter used by the Eicon 1550/1551.

1. Click ‘Start’, ‘Settings’, ‘Control Panel’.
2. Double-click the ‘Network’ icon. The Network dialog box appears.
3. Click the ‘Protocols’ tab.
4. If ‘TCP/IP’ is not listed, you must install it, as described below.
   - From the ‘Protocols’ tab, click ‘Add’.
   - Select ‘TCP/IP protocol’ as your network protocol, then click ‘OK’.
   - Click ‘Yes’ to use DHCP.
   - When prompted, insert the original Windows NT installation CD and enter **d:\i386** (where d: is the drive letter of your CD drive), and click ‘Continue’.
   - Do not click the ‘OK’ button yet; next you will verify your TCP/IP settings.
5. Click the ‘Protocols’ tab.
6. Select ‘TCP/IP protocol’, then click ‘Properties’.
7. Select ‘Obtain an IP address from a DHCP server’.
8. Click the ‘DNS’ tab. Delete any DNS addresses are configured.
9. Click ‘OK’.
10. Restart your computer if requested to do so.

TCP/IP Settings for Windows 2000/XP

Windows 2000/XP automatically created a network adapter profile (named ‘Local Area Connection’ by default) when the adapter was installed. Note that if you have more than one Ethernet adapter installed on your system, you must only change the settings for the adapter used by the Eicon 1550/1551.

1. Click ‘Start’, ‘Settings’ then ‘Network and Dial-up Connections’ (‘Network Connections’ for Windows XP).
2. In the Network and Dial-up Connections (Network Connections for Windows XP), right-click the appropriate adapter entry and click ‘Properties’. The properties window for this adapter is displayed.
3. Select ‘Internet Protocol (TCP/IP)’, then click ‘Properties’.
4. The settings should be ‘Obtain an IP address automatically’ and ‘Obtain DNS server automatically’.
5. Click ‘OK’, then ‘OK’ again, then click ‘Close’.
6. Restart your computer if requested to do so.

Technical Support

To obtain technical support for Eicon Networks Corporation products, visit our web site at:

`http://www.eicon.com/support/`

For the latest information on the Eicon 1550/1551, visit:

`http://www.eicon.com/wan1550/`

`http://www.eicon.com/wan1551/`

For customer service, contact your Eicon Networks Corporation supplier.

Using your Eicon 1550/1551

This section provides a general introduction to configuring and using your Eicon 1550/1551. More specific information on the Eicon 1550/1551's features are found later in this guide.

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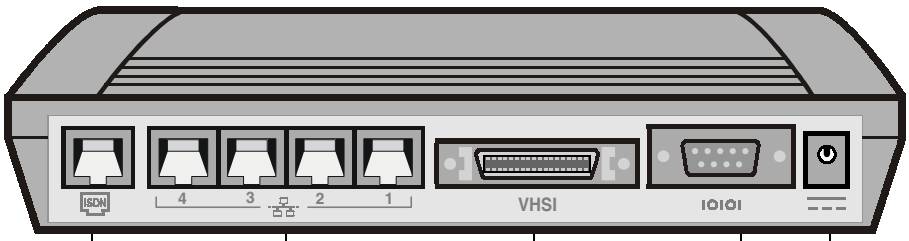
Ports



ISDN Port

Available with the Eicon 1551 only. Can be used as a backup connection in case the WAN connection is unavailable.

Ethernet Ports

Used for connecting the Eicon 1550/1551 to a computer or LAN.

A straight-through cable (blue cable) is used for connecting directly to a computer.

A yellow crossover cable (not included) is required to connect the Ethernet port directly to a network hub.

VHSI Port

Used for connecting the Eicon 1550/1551 to the external network.

Console Port*

Used for managing and configuring the Eicon 1550/1551

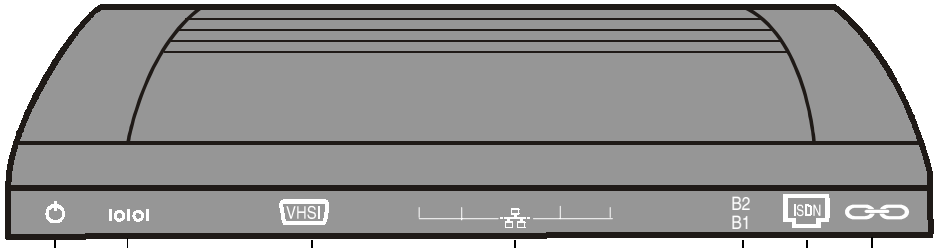
Power Connector

Used for connecting the Eicon 1550/1551 to an electrical outlet.

*For more information on using the Console Port, refer to the “Command Line Interface Reference Guide” located on the Eicon 1550/1551 CD-ROM.

Indicator Lights

The following diagram describes the behavior of the indicator lights on the Eicon 1550/1551. Note that the ISDN lights apply only to the Eicon 1551.



Power Light
Solid green: Power adapter is properly connected.

Flashing red only: Device firmware is being upgraded. Do not reset or unplug the power adapter.

Flashing red/green: Device is in boot mode. If you are not upgrading firmware while in boot mode, press the Reset button once to return the device to normal.

If you are upgrading firmware while in boot mode, do not press Reset for at least one minute after transferring the firmware to the device.

Rapidly flashing red: A fault has occurred. Press the reset button once to return to normal.

Console Port Light
ON or Flashing:
Data is being sent or received via the Console port.

Off: The Console port serial cable is not connected or data is not being sent or received via the Console port.

VHSI Light
*If you are using **X.25**:*
ON: The X.25 layer is ready.
FLASHING: The X.25 layer is not ready.
OFF: The X.25 port is closed or the cable is disconnected.

*If you are using **PPP**:*
ON: The PPP layer is connected.
FLASHING: The PPP layer is trying to connect to a remote site.
OFF: The PPP layer is closed or the cable is disconnected.

*If you are using **Frame Relay**:*
ON: The Frame Relay layer is connected.
FLASHING: The Frame Relay layer is opening.
OFF: The Frame Relay layer is closed or the cable is disconnected.

Ethernet Lights
ON: The Ethernet cable is connected properly.

OFF: The Ethernet cable is not connected, or the wrong cable is connected (straight-through or crossover).

FLASHING: Data is being sent or received via the Ethernet cable.

E4 Flashing red: An Ethernet collision has occurred. If infrequent, this is a normal occurrence that will correct itself.

B Lights
OFF: No call activity on the B-channel.

FLASHING: A call is being established on the B-channel.

SOLID: A call is connected on the B-channel.

ISDN Light
International Firmware:

OFF: D turns on to indicate a properly configured line. However, when the line is idle, many networks automatically disconnect the D-channel (turning off the D light) to conserve power.

SOLID: D will turn on just before the B light when the Eicon 1551 makes a call. When solid, the D light indicates a properly configured ISDN line.

Link Light
OFF: The ISDN physical interface is not synchronized, or the ISDN cable is improperly connected.

FLASHING: The ISDN physical interface is synchronizing.

SOLID: The ISDN physical interface is active.

Note: Flashing stops when synchronization is complete. Continuous flashing indicates an error. Make sure that the line is plugged in properly and that you are using the correct interface (S/T or U). For S/T with an NT1, make sure your ISDN line is terminated (see your ISDN provider for more details).

Resetting the Device via the Reset Button

The Reset button for the Eicon 1550/1551 is located on the bottom of the device.

Normal Reset

If you press the Reset button once quickly, you will do a ‘normal’ reset. This reboots the device, and your settings are left intact.

You can also do a normal reset using the ‘Reset Device’ button at the top of the browser window when you are using the web interface.

Reset Settings to Factory Defaults

Warning: Resetting to factory defaults erases all configuration settings.

To reset to factory defaults, hold down the ‘Reset’ button for at least 15 seconds.

Note: *This procedure will return the default IP address of the Eicon 1550/1551 to 192.168.1.1. If you changed the IP address of the Eicon 1550/1551 from this default setting, you will need to use the default IP address 192.168.1.1 to access the configuration menu.*

You can also reset to factory defaults using the Web-based configuration interface (see **Saving and Resetting Configuration Settings** on page 46) as well as the Reset Factory command (see for more information).

Entering Boot Monitor Mode

If you hold down the reset button for more than five seconds but less than 15 seconds, you will enter Boot Monitor mode, which is used for troubleshooting purposes only. Press the ‘Reset’ button once more to return the device back to normal operation.

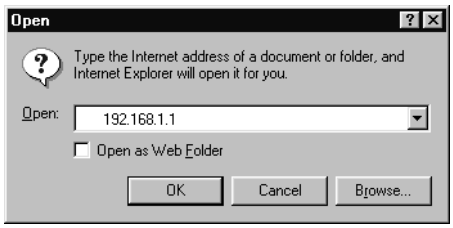
Accessing the Configuration Menu

The Eicon 1550/1551 Configuration Pages allow you to manage the configuration and operation of the Eicon 1550/1551. You can also view status information and perform maintenance tasks like updating the firmware.

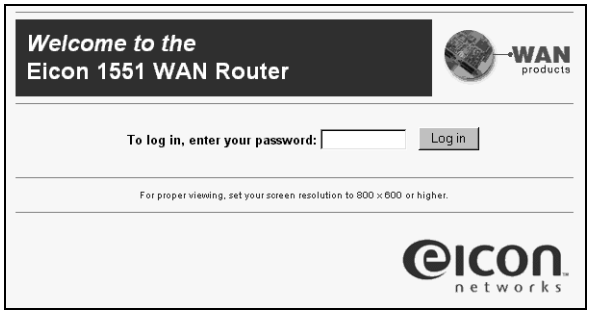
Note: *Only one user can access the configuration pages at a time.*

Procedure

1. Launch your web browser.
2. Click ‘File’, ‘Open’, then enter the following IP address:
   192.168.1.1

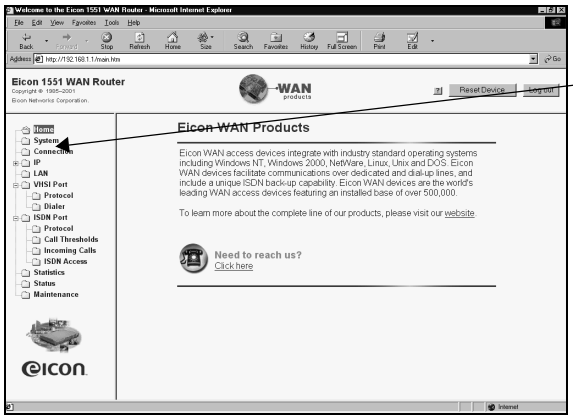


   Click ‘OK’ when done.
3. The ‘Log In’ page appears.

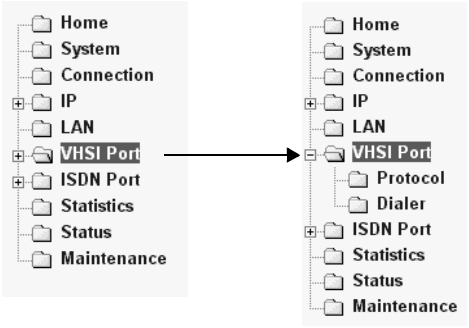


4. Enter the system password, if required, and click ‘Log in’.
   By default the Eicon 1550/1551 has no password.

5. The main configuration menu appears. To access the different settings, click on the links in the main menu, at the left of the window.

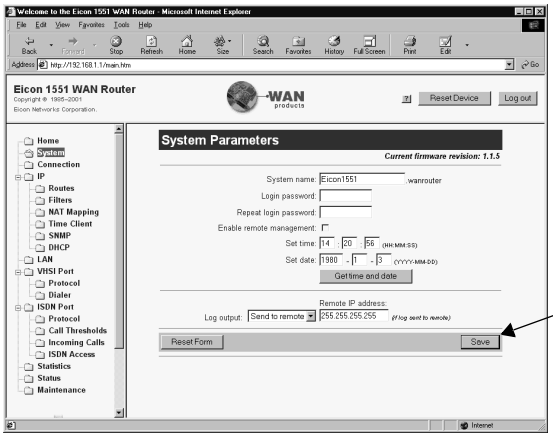


Some settings have subgroups, which are accessed by clicking the '+' next to the group.



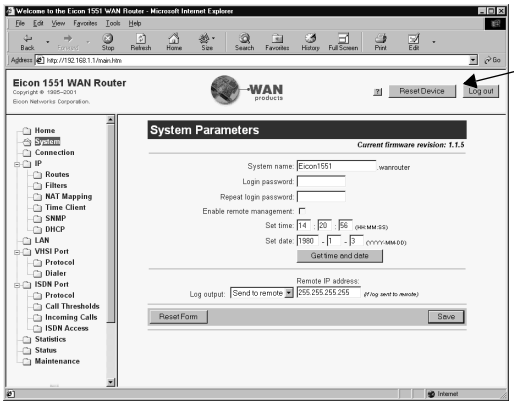
Saving configuration settings and resetting the device

Most pages in the configuration interface have a 'Save' button. When you click this button, your changes are saved to the Eicon 1550/1551.



Warning: You must click 'save' before moving to another page.

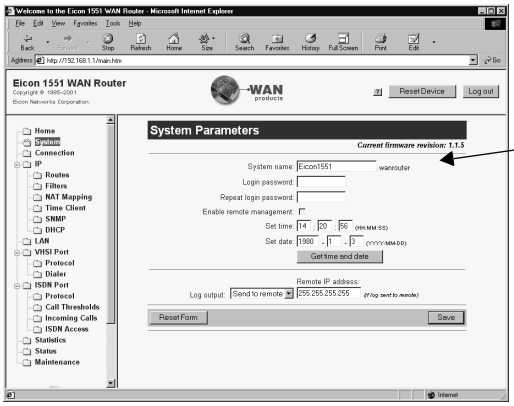
However, for the saved changes to take effect, you must reset the Eicon 1550/1551. You can do this by clicking the 'Reset Device' button on the main menu, or you can press the reset button on the device itself (see **Resetting the Device via the Reset Button** on page 41 for more information).

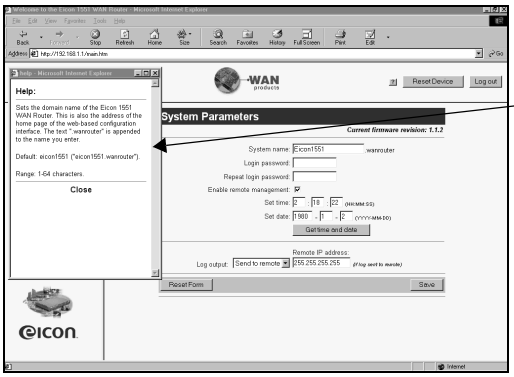


Note: *Click 'Save' before clicking 'Reset Device' or changing pages, otherwise the changes you made will be lost.*

Getting Help

Online help is available for all settings by clicking on a setting name.





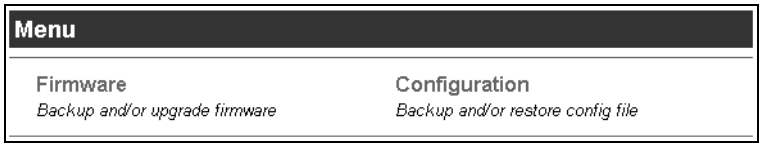
Upgrading Firmware via a Web Browser

Eicon Networks Corporation posts the latest Eicon 1550/1551 firmware on its web site. You can automatically update your Eicon 1550/1551 to the latest version using the web configuration interface.

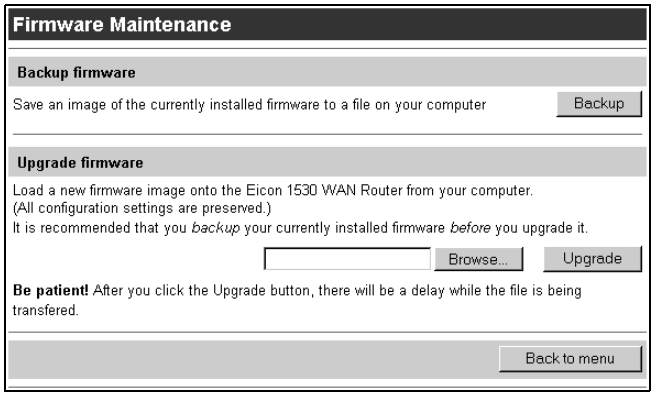
Note: *Configuration settings are normally preserved during firmware updates. However, if you wish to make a backup of your configuration before upgrading, see* ***Saving and Resetting Configuration Settings*** *on page 46.*

Procedure

1. Log in to the Eicon 1550/1551 as described in **Accessing the Configuration Menu** on page 42.
2. From the main menu, click ‘Maintenance’.
   The maintenance menu appears with two options, ‘Firmware’ and ‘Configuration’.



3. Click ‘Firmware’ to display the ‘Firmware Maintenance’ page.


Firmware Maintenance
Backup firmware
Save an image of the currently installed firmware to a file on your computer
Backup
Upgrade firmware
Load a new firmware image onto the Eicon 1530 WAN Router from your computer.
(All configuration settings are preserved.)
It is recommended that you backup your currently installed firmware before you upgrade it.
Browse...
Upgrade
Be patient! After you click the Upgrade button, there will be a delay while the file is being transfered.
Back to menu

4. To save a copy of the Eicon 1550/1551’s current firmware to disk, click ‘Backup’. This is done in case you encounter problems installing or using the new firmware.

   To upgrade the firmware, click the ‘Browse’ button, then select the new firmware file. When complete, the Eicon 1550/1551 is automatically reset to activate the new firmware.

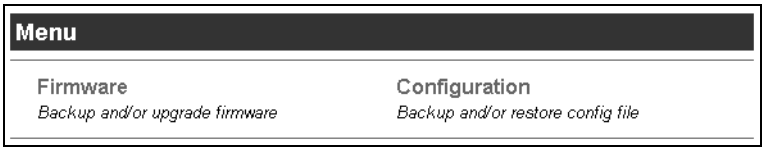
Saving and Resetting Configuration Settings

The web-based configuration interface makes it easy to save and restore configuration settings on the Eicon 1550/1551. This is useful for backup purposes, or if you intend to maintain several different configurations. You can also reset all settings to factory defaults.

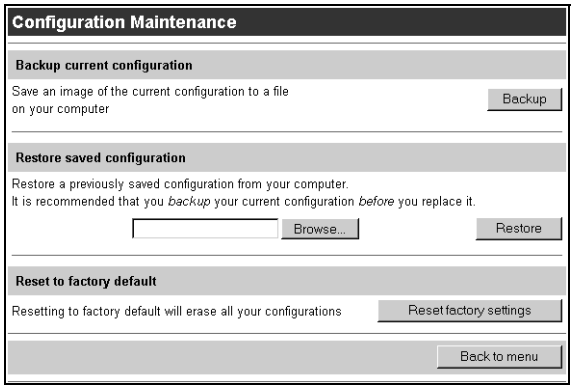
When you save the configuration settings, they are stored in a file on your computer.

Procedure

1. Log in to the Eicon 1550/1551 as described in **Accessing the Configuration Menu** on page 42.
2. From the main menu, click ‘Maintenance’.
   The maintenance menu appears with two options, ‘Firmware’ and ‘Configuration’.



3. Click ‘Configuration’ to display the ‘Configuration Maintenance’ page.


Configuration Maintenance
Backup current configuration
Save an image of the current configuration to a file on your computer
Backup
Restore saved configuration
Restore a previously saved configuration from your computer.
It is recommended that you backup your current configuration before you replace it.
Browse...
Restore
Reset to factory default
Resetting to factory default will erase all your configurations
Reset factory settings
Back to menu

4. To save your configuration settings to disk, click ‘Backup’.

   To restore a previously-saved configuration, click ‘Browse’, select the file, then click ‘Restore’. The backup file uses the extension .CFG.

   To reset the Eicon 1550/1551 to factory default settings, click ‘Reset factory settings’. Resetting the Eicon 1550/1551 to factory defaults will erase all your configuration settings, including the system password. Consider backing up your current configuration before you reset to factory defaults, just in case.

   Note: *If you changed the LAN IP address of the Eicon 1550/1551 from its default setting of 192.168.1.1, you will lose contact with the web configuration interface after the reset is complete. This is because the reset will return the Eicon 1550/1551 to its default of 192.168.1.1. To regain access to the Eicon 1550, access the IP address 192.168.1.1 using your web browser.*

   You can also reset the box to factory settings by holding down the device Reset button for 15 seconds. See **Resetting the Device via the Reset Button** on page 41 for more information.

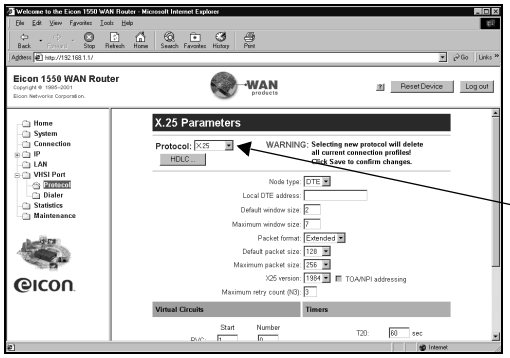
Changing the VHSI Port Protocol

The Eicon 1550/1551 uses profiles to make individual connections. However, the connection profiles depend on the protocol chosen for the VHSI port. When you change the VHSI port protocol, all profiles are erased. Therefore, it is very important to select the VHSI port protocol first, before creating or modifying connection profiles.

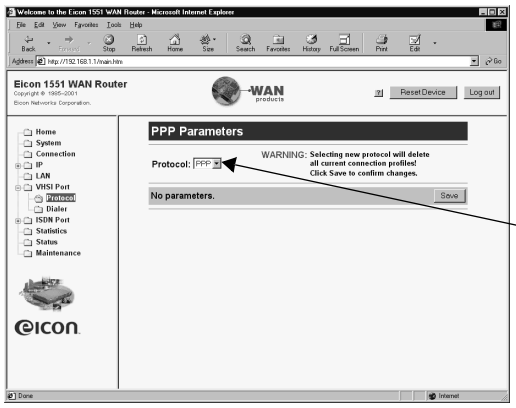
If you sometimes need to use different VHSI port protocols, use the configuration backup and restore feature as described in **Saving and Resetting Configuration Settings** on page 46.

Procedure

1. Log in to the Eicon 1550/1551 as described in **Accessing the Configuration Menu** on page 42.
2. The main configuration menu appears. From the main menu, click '+' next to the 'VHSI Port' to expand the VHSI Port subgroup.
3. Click 'Protocol' from the expanded menu.



4. To change the protocol setting, select a new protocol from the drop-down menu. In the following example, the protocol was changed from 'X.25' to 'PPP'.



Note: *The 'Protocol' page may or may not contain general protocol settings, depending on the protocol chosen. For example, when the protocol is set to X.25, the protocol page lists several parameters that can be modified. But when the protocol is set to PPP, no parameters are available.*

5. Click the ‘Save’ button to save this setting. You may have to scroll down in order to locate the button.

   If you change your mind and do not want to save your changes, click on any other link (such as the ‘Home’ link). In doing so, your choice for protocol will be ignored.

   Note: *Once you click ‘Save’, your connection profile settings are erased. To save your configuration information to a file, before changing the protocol, see* ***Saving and Resetting Configuration Settings*** *on page 46.*

6. For your settings to take effect, click the ‘Reset Device’ button at the top of the window. However, you may wish to modify other VHSI settings first, as well as create connection profiles (see **Creating and Editing Profiles** on page 49 for more information).

Creating and Editing Profiles

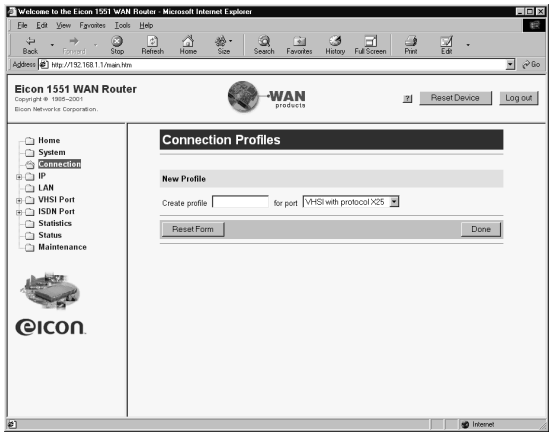
Settings for particular connections are contained in profiles on the Eicon 1550/1551. However, when you change protocols for the VHSI interface, all profile information is lost. To avoid having to re-enter configuration information, choose the protocol first, as described in **Changing the VHSI Port Protocol** on page 47.

Once your protocol is configured properly, you need to create connection profiles. The following procedure illustrates how profiles are created and modified when the protocol is set to X.25. The procedure is the same for other protocols.

When creating profiles, refer to **Limits on Creating Profiles** on page 22, for important information.

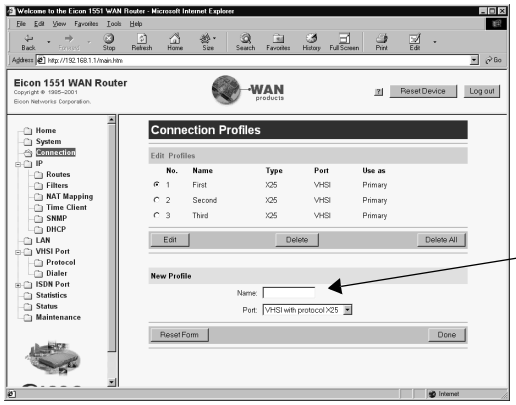
Procedure

1. Log in to the Eicon 1550/1551 as described in **Accessing the Configuration Menu** on page 42.
2. From the main menu, click the ‘Connection’ link. The ‘Connection Profiles’ page appears.

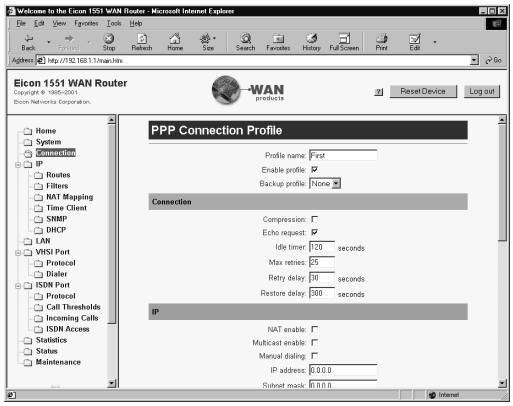


It should currently state ‘Create profile’ as no profiles have been defined yet.

3. To add a profile, enter the name in the ‘Name’ field, then click ‘Done’.



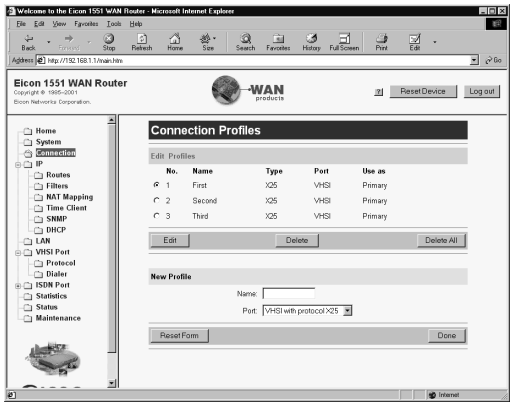
4. The profile settings page for your new profile will appear.



5. Make the required changes to the profile. Make sure to scroll down to the bottom of the page and inspect all parameters.

6. Click the ‘Save’ button when finished making your changes. If you do not click ‘Save’, your changes will be ignored. However, the profile you added will remain with the default settings.

7. To create another profile, click the ‘Connection’ Link. Your profile(s) will appear in a list at the top of the page. Scroll to the bottom of the page, enter a name in the ‘New Profile’ field, then click ‘Done’.



8. To delete a profile, select the profile from the list, then click ‘Delete’. To edit an existing profile, select the radio button to the left of the profile name and click “edit’.

9. For your settings to take effect, click the ‘Reset Device’ button at the bottom of the window.

Security

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Security Features Summary

Connecting your computers to an external network creates a wide range of benefits, but also exposes your computers to certain risks. To safeguard your data and systems, the Eicon 1550/1551 provides a comprehensive range of security features. This section explains how to use and configure each feature for optimal protection of your systems.

This table lists all security features offered by the Eicon 1550/1551, and their default settings.

Feature	Default	Description
System password	None	Restricts access to the Eicon 1550/1551 configuration interfaces.
Automatic log out	Active	Automatically terminates idle configuration sessions after 30 minutes idle.
Network address translation (NAT)	Disabled	NAT hides the addresses of the computers on the internal Ethernet LAN from the external network.
Remote management	Disabled	Permits remote systems to log on to the Eicon 1550/1551 web configuration interface, from the external network.
Call authentication (PPP only)	Available	Lets you authenticate an incoming connection, or provide authentication when making a connection.
Manual dialing	Disabled	Lets you manually control when the connection is established.
Custom security using IP filters	None	Allows you to filter specific IP datagrams for security reasons.
Command Line Interface	Available	The Command Line Interface allows you to change settings via text commands.

The following table lists the security features that can be applied to restrict access to the Eicon 1550/1551 configuration interfaces.

Source system	Connection	Security features that apply
Remote computer	External network	• System password • Automatic log out • Remote Management • Call authentication • Custom security using IP filters
Local computer	Ethernet	• System password • Automatic log out • Custom security using IP filters

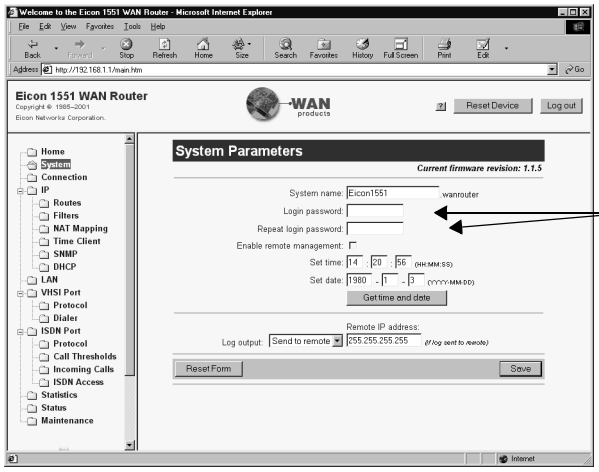
System Password

The Eicon 1550/1551 provides a system password that restricts access to the web-based configuration interface and the CLI. This ensures that configuration changes can only be made by authorized personnel.

By default, no password is defined.

Setting a System Password

1. From the menu, click ‘System’.
2. Enter the new system password in the ‘Login Password’ and ‘Repeat Login Password’ fields.



3. Click ‘Save’ then ‘Reset Device’.

Forgot your Password?

If you have forgotten your password, the only way to gain access to the configuration pages is to reset the Eicon 1550/1551 to its factory defaults. See **Resetting the Device via the Reset Button** on page 41 for more information.

Note: *Resetting the device also returns **all** configuration settings, including username and password information, to factory defaults.*

Automatic Log Out

The Eicon 1550/1551 applies an automatic timeout to configuration sessions. When a configuration session is idle for more than the timeout value, the Eicon 1550/1551 automatically logs the user out. This reduces the risk of unauthorized persons taking advantage of a logged-in computer that has been left unattended.

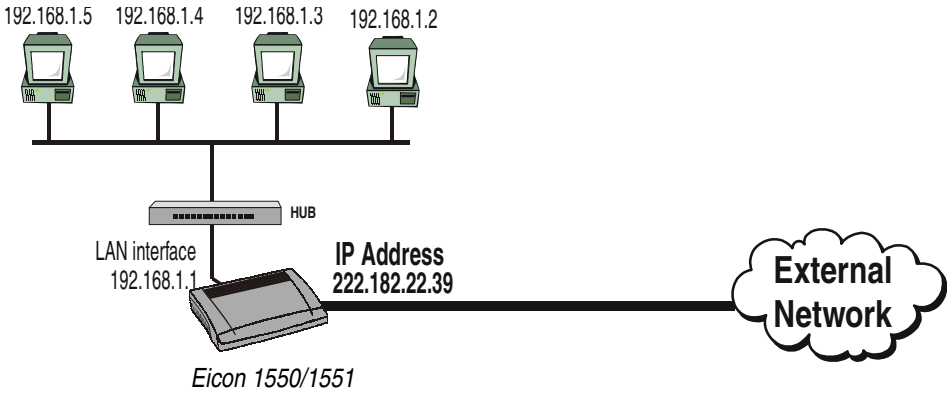
The timeout values, which are not configurable, are as follows:

- Web interface: 30 minutes.
- Telnet session: 2 minutes.

Note: *Changes that have not been saved are lost when the configuration session is terminated.*

Network Address Translation (NAT)

The Eicon 1550/1551 uses network address translation (NAT) to 'hide' the local LAN from all external resources. The benefits of this are the ability for all connected computers to access the external network using one user account, defined on the device itself. For example, when communicating with the external network, the four computers in the following diagram share the IP address '222.182.22.39'.



Notes

- NAT operates transparently, translating internal addresses to a single external one for all data traffic. NAT has no effect on total throughput.
- Most applications will work with NAT. However, some programs may not work well or at all with NAT enabled.
- NAT is disabled by default.

Security benefits

An additional benefit of NAT is increased network security. Like a firewall, NAT restricts access to the computers that reside on the local LAN; no computer on the internal LAN is visible to the external network. Computers on the internal network cannot act as FTP or web servers, nor can they share their drives using Windows Network Neighborhood. These security features can be weakened if you use NAT static mappings (see **NAT static mappings** below).

NAT static mappings

With NAT enabled, computers outside of the internal LAN do not have access (are not visible) to any computers on the internal LAN. If you need a computer on the internal LAN to be visible to the external network, the Eicon 1550/1551 provides a solution through NAT static mappings.

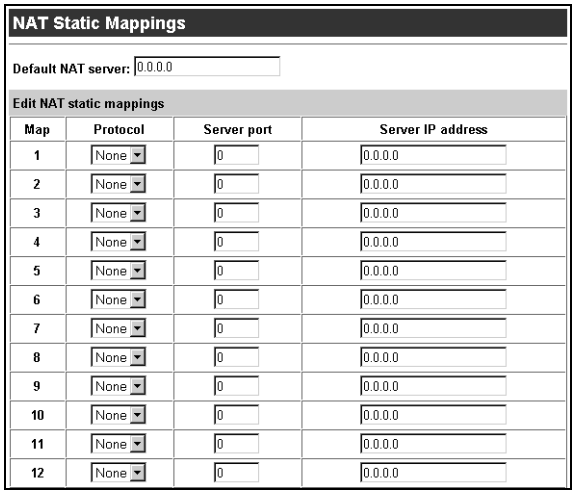
NAT static mappings allow you to permit specific computers on the internal LAN to receive certain incoming network traffic. For example, you could designate a computer to receive all incoming HTTP traffic, allowing it to function as a web server. However, the actual IP address of this computer is still hidden by NAT. Therefore, remote users must specify the address of the Eicon 1550/1551 to gain access to the web server.

When you create a NAT static mapping, the Eicon 1550/1551 routes *all* traffic for the protocol you specify to the designated computer. This includes traffic normally handled by the Eicon 1550/1551 itself. This leads to the following restrictions:

- Remote access to the configuration interfaces on the Eicon 1550/1551 via the external network can be disrupted. For example, if you designate a computer to receive HTTP traffic, remote access to the web configuration interface will be disrupted. However, local access via Ethernet will still be possible.
- Only *one* computer on the internal LAN can be designated to receive the traffic for a *specific* protocol. This means, for example, you cannot create multiple web servers; all web traffic must be sent to one computer on your LAN.

Creating Static NAT Mappings

1. From the main menu, click on the '+' next to the 'IP' link to expand the IP group. Then click 'NAT Mapping'.



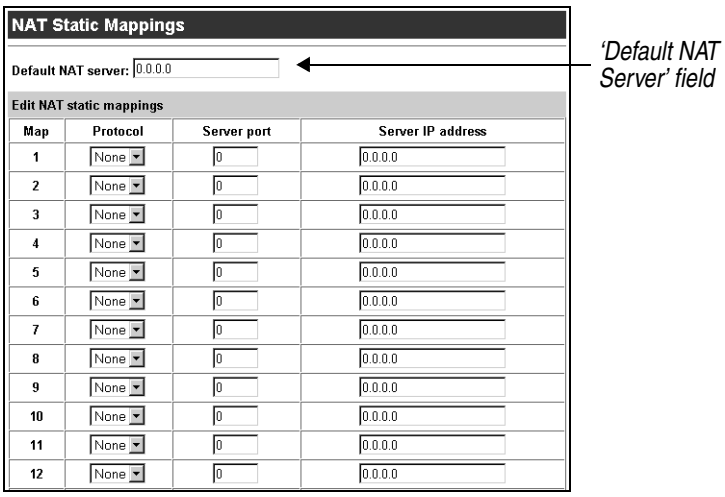
2. For each server that you want to define, specify the following parameters:
   - 'Protocol': The protocol that remote computers will use to access the server.
   - 'Server port': The port number that the protocol will use on the server.
   - 'Server address': The IP address of the computer that will act as the server. The server address must be on the same LAN as the Eicon 1550/1551 (or must be reachable via the LAN).
3. Click 'Save' then 'Reset'.

Default NAT Server

When the Eicon 1550/1551 receives incoming datagrams containing protocols it is not supposed to accept, the datagrams are discarded. For example, if an incoming datagram contains an FTP request, and no FTP server has been defined using a static mapping, the datagram is discarded.

In some cases, you may want to forward all datagrams containing unspecified protocols to a computer on your LAN. The Eicon 1550/1551 calls this computer the 'default NAT server'.

To define a default NAT server, enter the IP address of the device that should receive these datagrams into the 'Default NAT server' field on the IP Parameters panel.



Note: *The Eicon 1550/1551 handles traffic with the following protocols: HTTP, Telnet, TFTP, ECHO (UDP port 7), and SNMP. Only traffic that does not contain these protocols will be forwarded to the default NAT server. To forward the aforementioned protocols you must define a NAT static mapping for each one.*

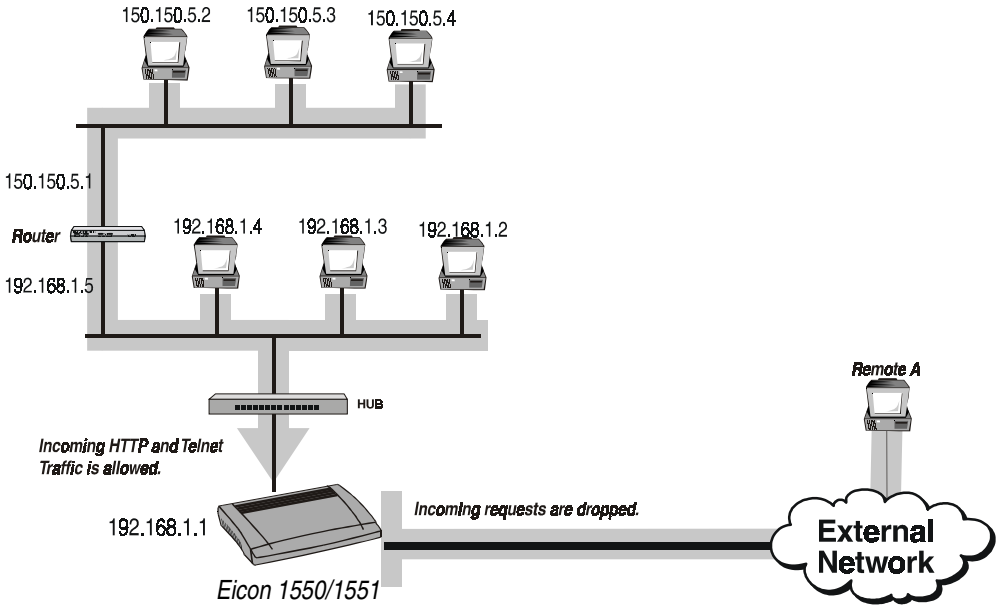
Enabling NAT for a particular profile

NAT can be enabled or disabled for each profile. By default, NAT is disabled for each profile. To enable NAT for a particular profile:

1. Click 'Connection' from the main menu.
2. Select the desired profile.
3. Scroll down to the IP options area.
4. Select 'NAT Enable'.
5. Click 'Save', then 'Reset Device'.

Remote Management

By default, the Eicon 1550/1551 does not allow remote devices to access its configuration interfaces via the external network. This feature can be enabled; however, this does not affect traffic on the local LAN created by the Eicon 1550/1551. If the local LAN is connected to other networks, these computers will continue to have access to the Eicon 1550/1551, even if remote management is disabled. Consider the following topology:



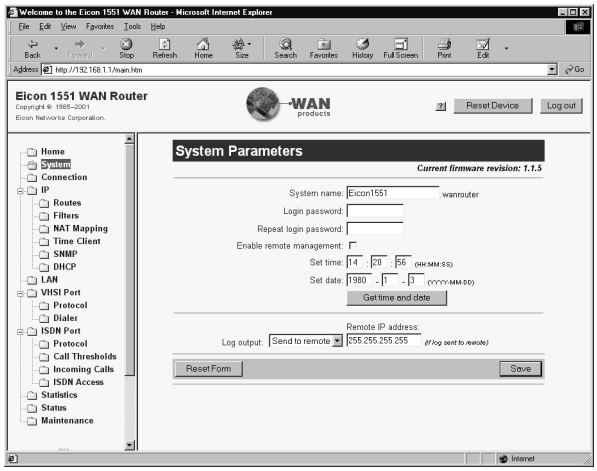
In the above example, all computers on the two LANs have access to the Eicon 1550/1551 configuration interfaces. However, remote computer A is blocked as it must go through the external network to access the Eicon 1550/1551.

Note: *Remote security is implemented using IP filtering. In the web interface, expand the 'IP' section and click 'Filters'.*

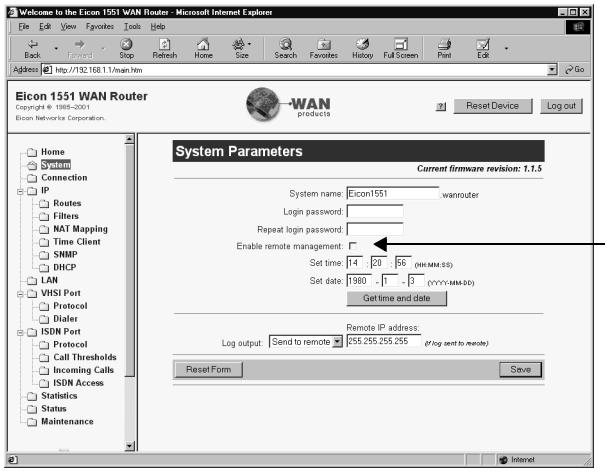
Enabling Remote Management

To enable remote management:

1. From the menu, click ‘System’.



2. Check the ‘Enable remote management’ check box.



3. Click ‘Save’ then ‘Reset’.

Defining a Password

If remote management is enabled, it is strongly suggested that you define a login password.

This parameter is available on the same page as the remote management option.

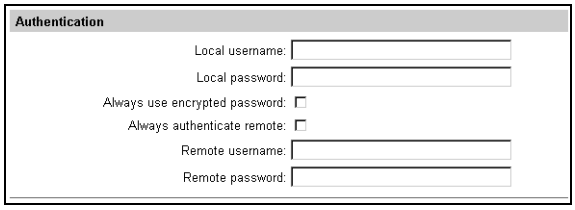
Authentication (PPP only)

Authentication works through the exchange of usernames and passwords. This process can be one-way (either the caller or callee gets validated) or two-way (both sides validate each other). Generally, authentication is one-way, with the incoming connection being validated. For example, when the Eicon 1550/1551 connects to a device on the external network, the Eicon 1550/1551 is authenticated by the remote device, i.e., the Eicon 1550/1551 must supply a username and password to log on.

To successfully use authentication, it is important that both devices are configured to support the same authentication options.

Setting up Call Authentication

1. From the menu, click ‘Connection’.
2. Scroll down to the ‘Authentication’ section of the page.



Note: *This section will only appear if the protocol is set to PPP and you have created a profile.*

3. Specify the ‘Local username’ and ‘Local password’. These values will be sent to the remote site during the authentication process.

Note: *Usernames and passwords are case-sensitive.*

4. If passwords must be encrypted, enable the ‘Always use encrypted password’ option.
5. If required, enable the ‘Always authenticate remote’ option, then enter the ‘Remote username’ and ‘Remote password’. The remote device must supply its own username and password in order for the connection to be completed.
6. Click ‘Save’, then ‘Reset’.

Manual Dialing

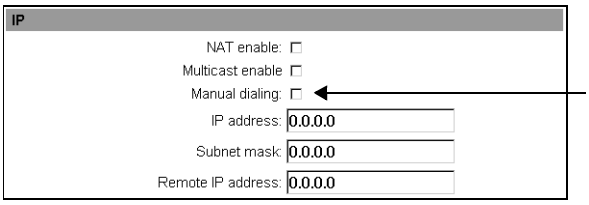
The Manual Dialing feature lets you manually control when the connection is to be established.

Enabling Manual Dialing

1. From the menu, click ‘Connection’.

   If required, select the desired profile.

2. Scroll down to the ‘IP’ section of the page.



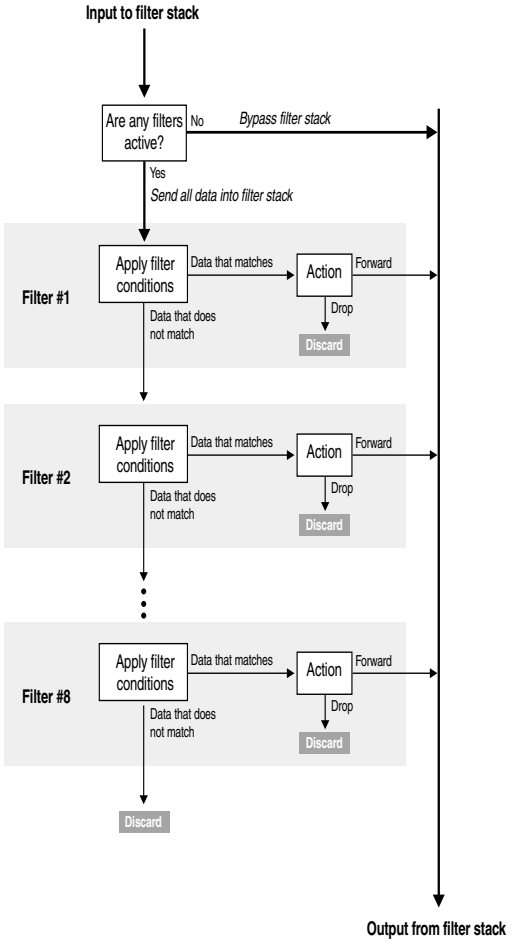
3. Check the ‘Manual Dialing’ option.
4. Click ‘Save’, then ‘Reset Device’.
5. Click ‘Connection’ from the menu, select the desired profile and click ‘dial’.

Custom Security Features using IP Filters

By using IP filters you can create your own custom security solutions. For example, you can limit local access to the Eicon 1550/1551 for specific computers, accept incoming traffic only from certain remote users or networks, or drop incoming or outgoing nuisance traffic.

- **How Filtering Works** 63
- **Defining a New Filter** 64
- **'Edit Filters' Page Options** 66
- **Example: Dropping incoming traffic from a specific network** 69
- **Example: Allowing incoming traffic only from a specific network** 70

How Filtering Works



Each profile you define for a particular connection has its own set of filters (called the 'filter stack'). All data packets, incoming and outgoing, pass through the filter stack of the profile being used for a particular connection. A filter stack can have up to 8 filters, allowing for sophisticated results.

Data cascades through the filter stack as shown in the following diagram. If a packet matches one of the filters in the stack, the filter action is performed.

Note: ***All incoming and outgoing data passes through the filter stack. Once any filter is activated, data transfer will be affected.***

Important Notes on Filters

- Profile information is not retained when the protocol (PPP or X.25) is changed. Since filters apply to individual profiles, filter information is also lost when the protocol is changed. Be sure that you have set up the Eicon 1550/1551 with the proper protocol, and that you have created all the necessary profiles, before creating filters.
- If you create a new profile, then wish to add filters for the profile, **you must first reset the device**. Click the 'Reset Device' button at the top of the browser window. You will not be able to create filters for a new profile until the device is reset.
- Unlike other configurations settings, you do not have to reset the Eicon 1550/1551 to make filters operational. Once you define and enable the filter, then press 'Save', as described in the section **Defining a New Filter** (below), the filter becomes active. This means you must take special care in creating filters, as you could filter out your own access to the box accidentally. Before creating complex filters, it is recommended that you backup your configuration settings. See **Saving and Resetting Configuration Settings** on page 46.

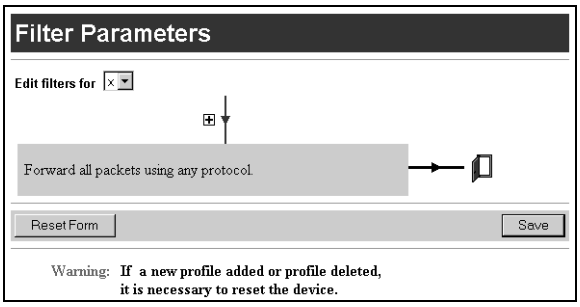
Defining a New Filter

Filters become active immediately after they are defined, saved, and enabled.

1. Start the web configuration interface and log in.

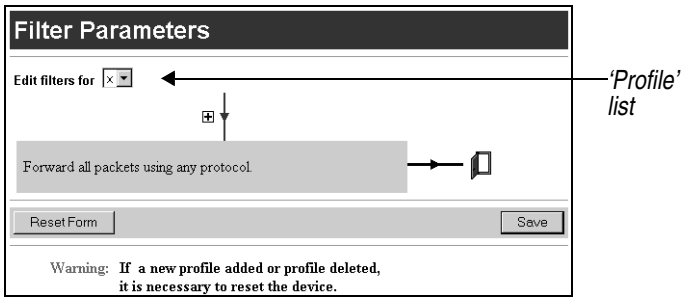
   Note: *If you have created a new profile since the last time the device was reset, reset the device now by clicking 'Reset Device' at the top of the browser window. You must have at least one profile defined before you can create a filter.*

2. Click the '+' next to 'IP' in the menu to expand the IP tree.
3. Click 'Filters' to display the 'Filter Parameters' page.

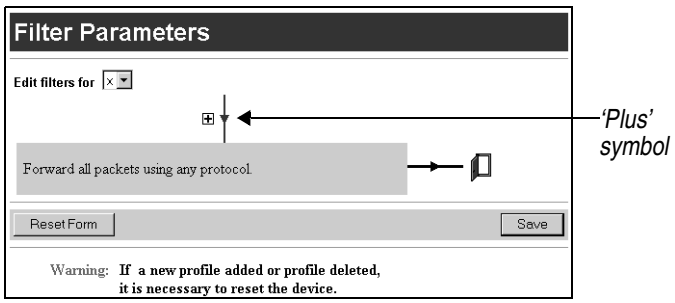

Filter Parameters
Edit filters for
Forward all packets using any protocol
Reset Form
Save
Warning: If a new profile added or profile deleted, it is necessary to reset the device.

As shown in the above screenshot, the Eicon 1550/1551 assigns a default filter automatically. This filter forwards all packets using any protocol, essentially letting all data pass through unfiltered.

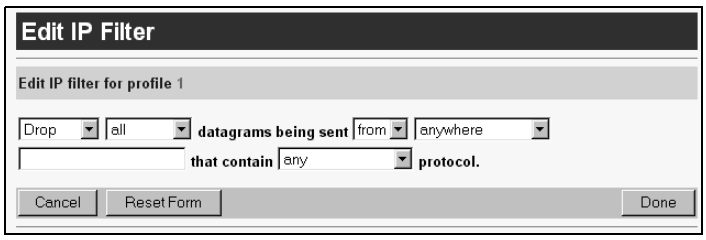
4. If you have more than one profile available, select a profile from the drop-down menu (next to ‘Edit Filters for’).


Filter Parameters
Edit filters for
‘Profile’ list
Forward all packets using any protocol.
Reset Form
Save
Warning: If a new profile added or profile deleted, it is necessary to reset the device.

5. To insert a new filter, click the ‘+’ symbol.

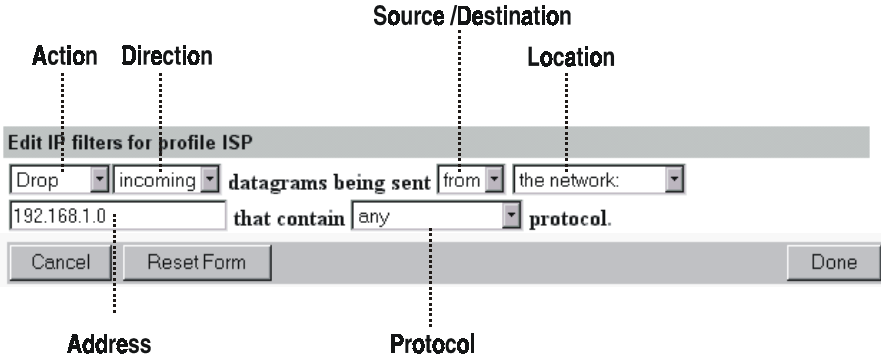

Filter Parameters
Edit filters for
‘Plus’ symbol
Forward all packets using any protocol.
Reset Form
Save
Warning: If a new profile added or profile deleted, it is necessary to reset the device.

6. The ‘Edit IP Filters’ page appear.



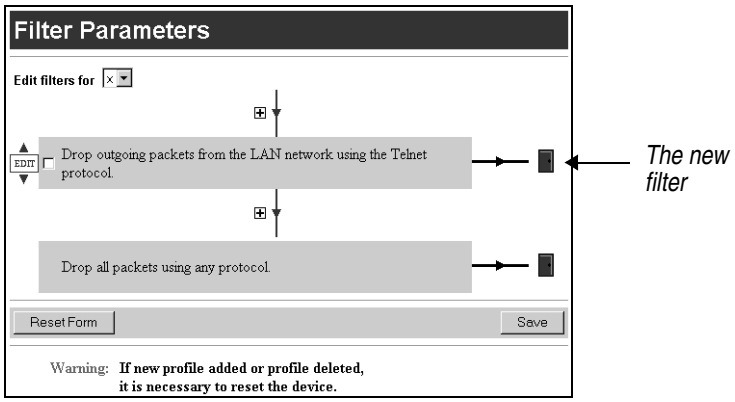
7. Define the settings for the filter using the drop-down menus and click ‘Done’.

   The following diagram shows a quick description of what each field means. For more details on the available options, see **‘Edit Filters’ Page Options** on page 66.

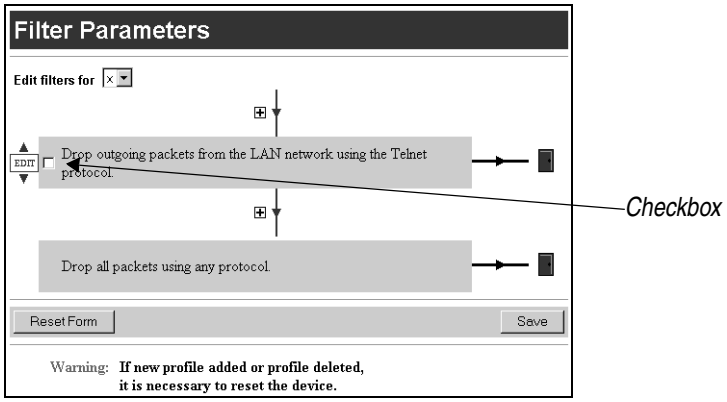


8. When finished, click the ‘Done’ button.

9. Once you click ‘Done’, you are returned to the main filter page. The new filter you just defined is shown in the list. However, the checkbox to the left of the filter definition is empty, indicating that the filter is not enabled.


Filter Parameters
Edit filters for
EDIT
Drop outgoing packets from the LAN network using the Telnet protocol.
Drop all packets using any protocol.
Reset Form
Save
Warning: If new profile added or profile deleted, it is necessary to reset the device.
The new filter

10. Enable the filter by clicking the box that appears to the right of the ‘Edit’ button.


Filter Parameters
Edit filters for
EDIT
Drop outgoing packets from the LAN network using the Telnet protocol.
Drop all packets using any protocol.
Reset Form
Save
Warning: If new profile added or profile deleted, it is necessary to reset the device.
Checkbox

11. Click ‘Save’. This makes the filter operational.

Note: *Unlike other configurations settings, you do not have to reset the Eicon 1550/1551 to make filters operational.*

‘Edit Filters’ Page Options

Action

- ‘Drop’: Discard data that matches the filter definition.
- ‘Forward’: Send data that matches the filter definition to the filter output.

Direction

- ‘incoming’: Data being received by the Eicon 1550/1551 originating from the external network.
- ‘outgoing’: Data being sent by the Eicon 1550/1551 to the external network.
- ‘all’: Both incoming and outgoing.

Source / Destination

- ‘from’: Examine the source IP address of the datagram.
- ‘to’: Examine the destination IP address of the datagram.

Location

- ‘the Ethernet LAN’: Sets the filter to match datagrams with network addresses that are the same as that of the Eicon 1550/1551. By default, this is 192.168.1.0. A mask of 255.255.255.0 is used to extract the network address.
- ‘the network’: Sets the filter to match datagrams with network addresses that are the same as the one you specify. Choosing this option requires that you supply the IP address of a class C network in the next box. The filter uses a mask of 255.255.255.0 to extract the network address (class C network mask).
- ‘host’: Sets the filter to match datagrams with IP addresses that are the same as the one you specify. Choosing this option requires that you supply the IP address of the host computer in the next box. The filter uses a mask of 255.255.255.255.
- ‘anywhere’: Sets the filter to ignore the source and destination address in the datagram.

Address

- ‘Address’: Only applies if you select *the network* or *the host* for location.

Protocol

IP datagrams can carry a wide variety of protocol traffic. The Eicon 1550/1551 lets you filter many of the most popular protocols. The following descriptions explain some of the options that are available.

- ‘any’: Applies the filter to any datagram.
- ‘any well known’: Applies the filter to any protocol using TCP or UDP ports in the range 0 to 1023. See RFC 1700 for the complete list of protocols.
- ‘UNIX’: Applies the filter to any protocol using TCP or UDP ports in the range 512 to 1023. See RFC 1700 for the complete list of protocols.
- ‘TCP’: Many protocols (such as HTTP, FTP, Telnet, News) make use of TCP. If you filter all TCP traffic you will prevent the use of these protocols. Note that access to the web configuration interface occurs via HTTP and access to the command line interface (CLI) occurs via Telnet.
- ‘UDP’: Many protocols (such as SNMP, Time, TFTP, BOOTP) make use of UDP. If you filter all UDP traffic, you will prevent the use of these protocols.
- ‘FTP’: Applies the filter to all datagrams containing the file transfer protocol.
- ‘Web (HTTP)’: If you filter all HTTP traffic, you may not be able to reach the web configuration interface. Filtering outgoing HTTP traffic can be used to prevent users from browsing on the Internet.
- ‘Mail (SMTP)’: Applies the filter to all datagrams containing the mail (SMTP) protocol.
- ‘Mail (POP3)’: Applies the filter to all datagrams containing the mail (POP3) protocol.
- ‘Telnet’: If you filter all Telnet traffic, you will not be able to reach the command line interface (CLI).

- ‘TFTP’: The Eicon 1550/1551 can function as a TFTP server to support uploading and downloading of configuration files. If you filter TFTP traffic, you will not be able to use this feature.
- ‘DNS’: Domain name system. Filtering DNS datagrams can cause disruptions in the ability to access remote sites.

The following options are also available: NFS/RPC, News, Time (NTP), BOOTP, SNMP, ICMP, Ping (ICMP), Ping Reply, ICMP Redir. For a description of these protocols, consult the appropriate RFC at the site http://www.faqs.org/.

Warning: Be Careful when Creating Filters

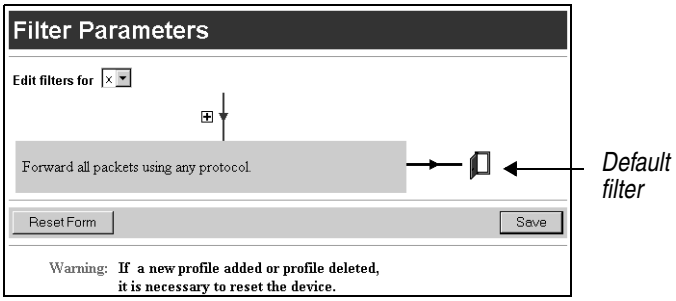
Filters are a very powerful tool. Be careful when creating filters, since you may accidentally define a filter that could bar all incoming and outgoing data, including access to the Eicon 1550/1551’s web or command line interface to change settings.

Please read **Default Filters** on page 68 before experimenting with filters.

If you find you have accidentally filtered yourself out of access to the Eicon 1550/1551, you must reset the box to factory defaults by holding down the reset button for 15 seconds. However, you will lose all configuration information. As a precaution, back up your configuration before using filters.

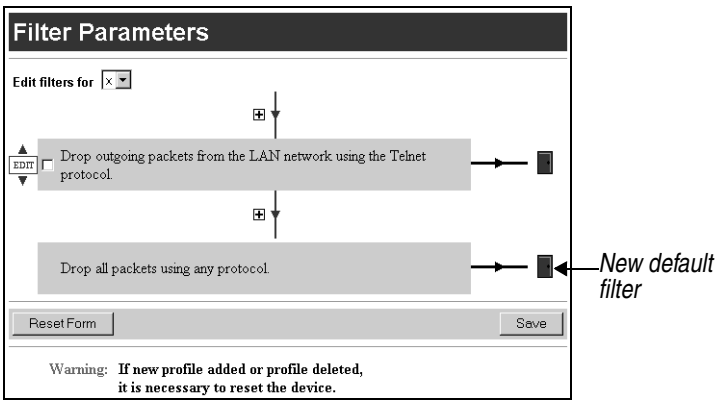
Default Filters

When a profile has no filters defined, a default filter is automatically supplied by the Eicon 1550/1551, as shown below.


Filter Parameters
Edit filters for
Forward all packets using any protocol
Reset Form
Save
Warning: If a new profile added or profile deleted, it is necessary to reset the device.
Default filter

The default filter forwards all packets from anywhere, and allows all traffic through unimpeded. The default filter is always the last filter in the stack and cannot be edited.

However, the moment you create one filter, a new default is used that **drops all** traffic, as shown below.


Filter Parameters
Edit filters for
Drop outgoing packets from the LAN network using the Telnet protocol.
Drop all packets using any protocol.
New default filter
Reset Form
Save
Warning: If new profile added or profile deleted, it is necessary to reset the device.

This situation will usually require that you create at least one filter before the last filter. The new filter would forward legitimate traffic; all other traffic would be dropped by the last filter.

For example, if you wanted to bar all incoming and outgoing web traffic, but allow all other traffic, the filter stack would resemble the following:

1. Drop all packets from anywhere using the web protocol.
2. Forward all packets from anywhere using any protocol.
3. Drop all packets using any protocol (default last filter).

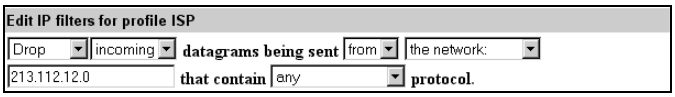
When a packet goes through the filter stack, the Eicon 1550/1551 would first check if the packet is using the web protocol. If so, the packet is dropped. If not, the next filter is applied, which essentially forwards anything. The third filter is never reached, because the second filter catches all other traffic.

This type of filter stack is called an ‘anything but’ stack, as it lets all traffic through with specific exceptions. The opposite of this is a ‘nothing but’ stack, which allows packets from specific networks or protocols, but drops everything else. This type of stack is much more restrictive, and in this case, the second filter (‘Forward all packets...’) is not necessary.

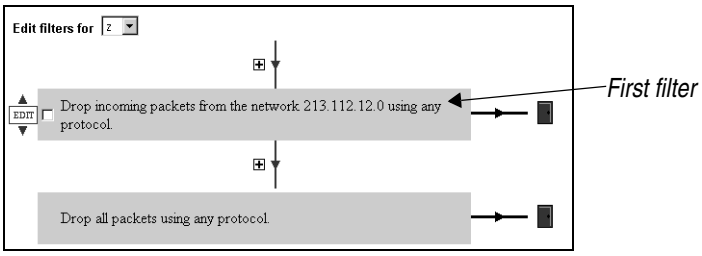
See **Example: Dropping incoming traffic from a specific network** and **Example: Allowing incoming traffic only from a specific network** on page 70 for more examples.

Example: Dropping incoming traffic from a specific network

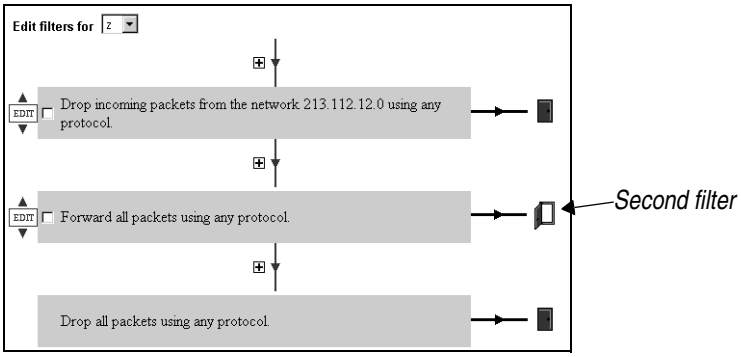
This example defines a filter to make sure that no traffic is accepted from a specific network. Assume the network has the IP address 213.112.12.0.



After creating the first filter, the filter page should look like this:


Edit filters for
Drop incoming packets from the network 213.112.12.0 using any protocol.
Drop all packets using any protocol.
First filter

Since the Eicon 1550/1551 automatically changed the last filter to one that drops **all** traffic, you must create a second filter (before the last one) that allows all other traffic through, as shown below. Without the second filter, all traffic would essentially be barred.

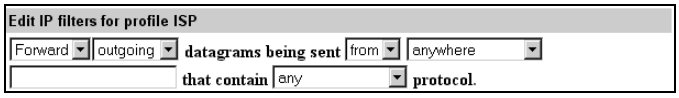

Edit filters for
Drop incoming packets from the network 213.112.12.0 using any protocol.
Forward all packets using any protocol.
Drop all packets using any protocol.
Second filter

Example: Allowing incoming traffic only from a specific network

This example shows how to allow the Eicon 1550/1551 to only accept **incoming** data from a specific network (112.111.212.0). Incoming data from all other networks is dropped. However, outgoing traffic is not affected. This requires defining two filters.

- Define the first filter to forward only incoming traffic from 112.111.212.0, as shown below.

- Define the second filter to forward all outgoing traffic.The filter should state 'Forward outgoing datagrams being sent from anywhere that contain any protocol,' as shown below.



The third and last filter (the default filter) will drop all traffic. Incoming data that does not originate from 112.111.212.0 will pass through the first two filters and will be dropped by the last filter. All outgoing data will pass through the first filter but will be caught by the second.

Web Interface Settings Glossary

This section lists all settings available through the web interface, along with explanations as to what each setting means. This information can also be found by clicking on the setting name while working within the web interface.

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HDLC Menu (VHSI Tree) (X.25) 107
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ISDN Menu > Incoming Calls 127
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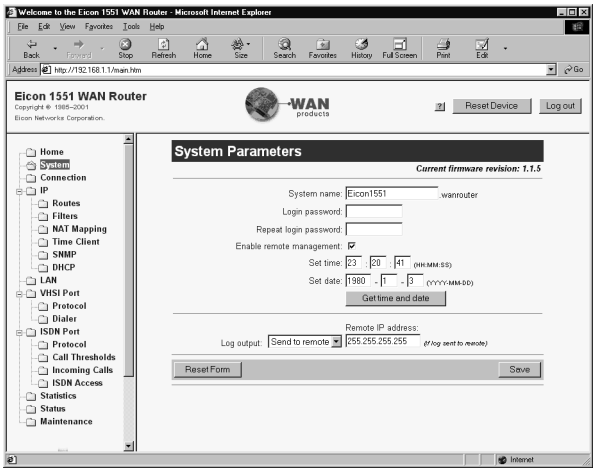
System Menu



System Name

Sets the domain name of the Eicon 1550/1551. This is also the address of the home page of the web-based configuration interface. The text '.wanrouter' is appended to the name you enter.

Range: 1-64 characters, no spaces. Default: **Eicon 1550** ('eicon1550.wanrouter') or **Eicon 1551** ('Eicon1551.wanrouter), depending on the model.

Login Password

Defines the password that users need to specify when logging on. The password is case-sensitive, which means 'PASS' and 'pass' are not the same.

Range: 0-11 characters, no spaces. Default: none (no password required to log in).

Repeat Login Password

For verification, repeat the password you entered in the 'Login Password' field. The password will only be changed if both fields match.

Enable Remote Management

When enabled, allows remote computers to connect to the Eicon 1550/1551 and access its configuration interfaces. A remote computer is considered to be any computer that is not on the local LAN. It is strongly recommended that you define a system password if you enable this option.

Note: *Disabling remote management results in the creation of two new IP filters that block outside traffic from making HTTP or Telnet requests to the Eicon 1550/1551.*

Set Time

Sets the internal system clock.

Set Date

Sets the internal system date, in yyyy-mm-dd format.

Get Time and Date button

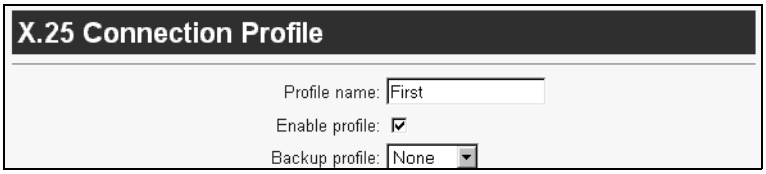
Gets the time and date from your computer's clock.

Log Output
Remote IP Address

Sends event log information to the specified device. Choices:

- Disabled: Stops display of event log output, but does not stop recording of event log data.
- Send to Remote: The remote devices must implement a UNIX-compatible syslogd protocol to successfully receive event log messages. When this setting is selected, you must also enter the IP address of the remote device.

Connection Menu



Profile Name

Defines a name for this profile. The name must not contain spaces.

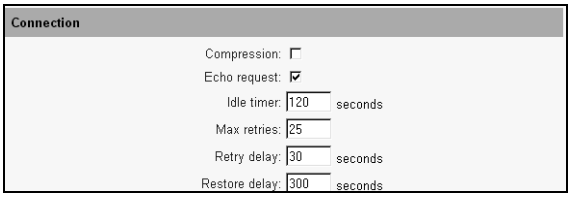
Enable Profile

Enables/disables the current profile.

Backup Profile

Selects the backup profile to be used when this profile cannot connect. The backup profile is only invoked when the maximum number of connection retries has been exceeded, at which point a profile is set to a ‘failed’ state. The backup profile (if defined) is then used.

Connection Menu > Connection Group (PPP)



Compression

Enables/disables PPP compression. When enabled, one of the following standards is automatically negotiated:

- Ascend
- MPPC
- MS-STAC
- STAC 1
- STAC 3

Default: Disabled.

Echo Request

Enables/disables the use of PPP echo requests. Some systems do not properly respond to PPP echo requests. To connect to such systems, PPP echo requests should be disabled.

Default: Enabled.

Idle Timer

Defines the idle timer for this profile, which controls how long a data call should stay connected when no traffic is being sent or received. When the idle timer expires, the call is disconnected.

Default: 120 seconds.

Range: 10-900 seconds. Specify 0 to disable automatic disconnection.

This parameter automatically changes to 900 seconds when **Manual Dialing** (page 80) is enabled.

Max Retries

Defines the maximum number of connection attempts this profile is allowed to make. When this limit is reached, the profile is placed in the ‘failed’ state. A backup profile, if defined, will be used on the next dial-out attempt.

To automatically reset the profile, enter a Profile Restore Delay on the Profile page. To reset the profile manually, dial it or reset the Eicon 1550/1551.

Default: 25. Range: 0-250.

Retry Delay

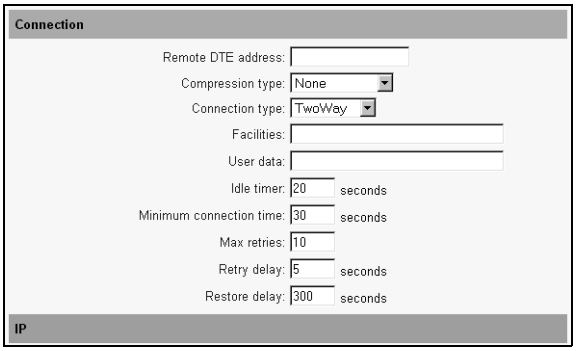
Defines the amount of time in seconds to wait before allowing new attempts to connect. The default and range depend on the country.

Range: 1-1800. Default: 30.

Restore Delay

Defines how long to wait before automatically restoring a profile from ‘failed’ to ‘ready’. Range: 300-65535 seconds. Specify 0 to disable automatic restore. Default: 300 seconds. A profile fails if a connection cannot be established after the Max Retries limit.

Connection Menu > Connection Group (X.25)



Remote DTE Address

Defines the remote X.25 address the Eicon 1550/1551 calls to establish the connection.

Range: 1-15 digits.

When the X.25 connection type is set to permanent (see the ‘Connection Type’ setting), this parameter defines the VC number used.

Compression Type

Defines the type of compression used for X.25 traffic.

- NONE: No compression.
- EICON: Compression negotiation: CCP (Compression Control Protocol). Compression algorithm: LZS-STAC. Check mode: LCB, Sequence number, and extended mode. Not compatible with Cisco routers.
- BAY: Compression negotiation: WCP. Compression algorithm: Magnalink. Check mode: LCB. Dictionary size: 8K or 32K.
- CISCO: Compression negotiation: None. Compression algorithm: LZS-STAC. Not compatible with Eicon mode.

Connection Type

Defines the type of connection that will be established with the remote device.

- TWOWAY: Both the Eicon 1550/1551 and remote device can initiate the connection.
- INCOMING: The remote device must initiate the connection.
- PERMANENT: A PVC is permanently established between two destinations. No call setup is required.

Facilities

Sets the X.25 facilities used to establish an X.25 call with this profile. Encode facilities as a hexadecimal string of characters separated by commas, colons, or hyphens. Maximum length is 14 bytes. For example: 42,07,07

User Data

Specifies the call user data the device will include when establishing an X.25 call. Encode call user data as hexadecimal digits separated by commas, colons, or hyphens. Maximum length is 16 bytes. For example: 42,07,07

Idle Timer

Defines the maximum amount of time an X.25 connection can be idle before the connection is dropped.

Range: 1-600 seconds. Specify 0 to disable automatic disconnection.

Default: 20 seconds.

Minimum Connection Time

Defines the minimum amount of time an X.25 connection must stay connected.

Range: 0-1800 seconds. Default: 30 seconds.

Max Retries

Defines the maximum number of attempts this profile makes to establish a connection with this profile. When this limit is reached, the profile is placed in a ‘failed’ state. To reset the profile manually, dial it or reset the Eicon 1550/1551.

Range: 0-250. Default: 10

Retry Delay

Defines the amount of time to wait after a failed connection attempt, before retrying.

Range: 0-1800 seconds. Default: 5 seconds.

Restore Delay

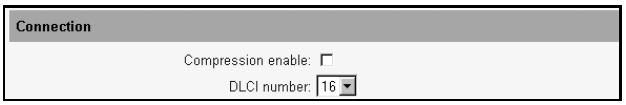
Defines how long to wait before automatically restoring a profile from ‘failed’ state to ‘ready’.

Range: 300-65535 seconds. Specify 0 to disable automatic restore.

Default: 300 seconds.

A profile fails if a connection cannot be established after the Max Retries limit is reached.

Connection Menu > Connection Group (Frame Relay)



Compression enable

Enables/disables compression when Frame Relay is used.

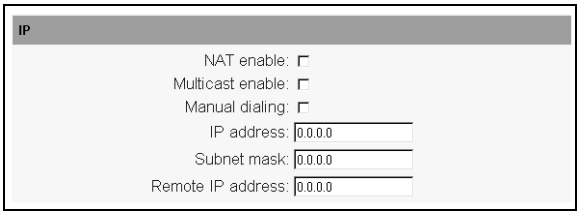
DLCI number

Defines the DLCI number for the current profile.

A DLCI is the Frame Relay equivalent of a hardware address, associated with an established Permanent Virtual Circuit (PVC).

Range: 16-1007.

Connection Menu > IP Group



NAT Enable

Enables/disables NAT (Network Address Translation). With NAT enabled, only one IP address is used when communicating with remote sites via the external network. The real IP addresses of computers on the local LAN are never revealed to remote sites.

Default: Disabled.

Multicast Enable

Enables/disables support for IP multicasting. When disabled, IP multicast datagrams are not forwarded from the external network onto the internal Ethernet LAN. To allow computers on the internal LAN to subscribe to services that use IP multicasting as a delivery mechanism, you must enable this option.

Default: Disabled.

Manual Dialing

Enables/disables manual dialing of this profile. With manual dialing enabled, this profile will NOT be automatically connected when data needs to be sent. Instead, you must manually connect the profile from the main 'Connections' page.

Note: *When you enable this option for PPP profiles, the value of the Idle Timer is increased from 120 to 900 seconds.*

IP Address

Defines the IP address this connection profile should use when a static address is assigned to the Eicon 1550/1551.

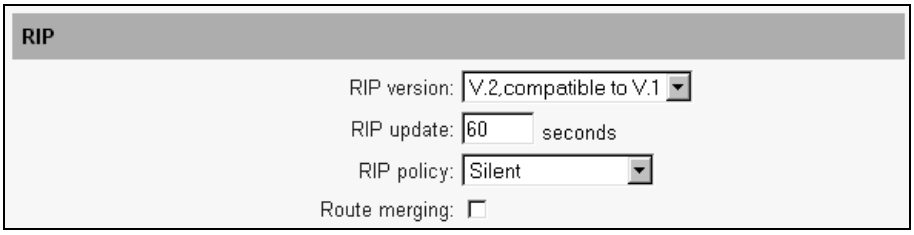
Subnet Mask

Defines the subnet mask this connection profile should use when a static address is assigned to the Eicon 1550/1551.

Remote IP Address

Defines the IP address of the remote device to which this profile connects. Use this only in cases when a static IP address is assigned to the remote site.

Connection Menu > RIP Group



RIP Version

Enables/disables support for RIP (Routing Information Protocol). When enabled, routing information will be exchanged with other devices.

Choices:

- Version 1: Supports RIP version 1.
- Version 2: Supports RIP version 2.
- V.2, compatible to V.1: Supports RIP version 2 that is version 1 compatible (implies broadcasting RIP-2 updates).
- Disable: Disables RIP support.

RIP Policy

Defines how route updates, requests, and responses are managed. Choices:

- Silent: RIP accepts updates from other systems, but will not respond to requests or send updates.
- Periodic: RIP sends a complete update to all neighbors and replies to all incoming requests (LAN only). This is how RIP operates normally.
- IfConnected: Allow RIP updates only if connected.

Default: Silent.

RIP Update

Defines the amount of time to wait (in seconds) between sending updates to peers.

- 30 seconds when in LAN profile or X25 profile.
- 60 seconds when in PPP profile where POLICY is SILENT or IFCONNECTED.
- 120 seconds when in PPP profile where POLICY is PERIODIC or SNAPSHOT.

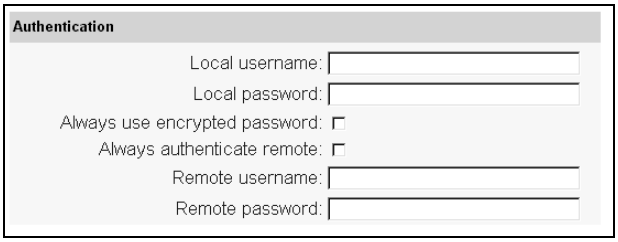
Default: 30

Route Merging

Enables/disables RIP route merging. When enabled, RIP merges all similar routes to reduce the routing table size and save memory.

Default: Disabled.

Connection Menu > Authentication Group (PPP)



Local Username

Defines the name used when replying to valid authentication requests.

Range: 0-31 alphanumeric characters (no spaces).

Local Password

Defines the password used when replying to valid authentication requests.

Range: 0-31 alphanumeric characters (no spaces).

Always Use Encrypted Password

Defines how authentication is handled for a call. If the remote is not using the same type of password (encrypted/unencrypted), the call is rejected.

- Enabled: Accept calls using encrypted passwords only.
- Disabled: Accept calls using either encrypted or unencrypted passwords.

Default: Disabled.

Always Authenticate Remote

Enables/disables password authentication when dialing out.

If enabled, the Eicon 1550/1551 attempts to authenticate the remote with whatever authentication method is defined.

Default: Disabled.

Remote Username

Defines the name the remote device must supply when authentication is requested by the Eicon 1550/1551.

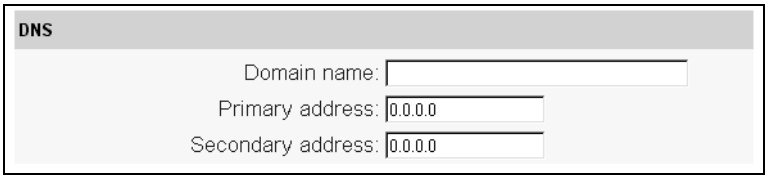
Range: 0-31 alphanumeric characters, no spaces.

Remote password

Defines the password the remote device must supply when authentication is requested by the Eicon 1550/1551.

Range: 0-31 alphanumeric characters, no spaces.

Connection Menu > DNS Group



Domain Name

When DNS relay is enabled, each DNS request is checked against the name set with this command. If so, a connection defined by this profile is established, and the request is forwarded. Enter a DNS domain name (up to 32 alphanumeric characters), or use * to match any name.

Primary Address

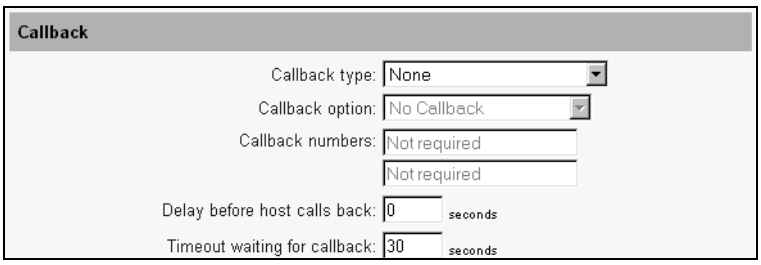
Defines the address of the first DNS server where DNS requests are to be sent, when DNS Relay is enabled.

Secondary Address

Defines the address of the second DNS server where DNS requests are to be sent. The secondary server is only used when the PRIMARY does not reply.

Connection Menu > Callback (Eicon 1551 only)

Note: *The following two pages refer to the ISDN feature available **only** with the Eicon 1551 WAN Router.*



Callback type

Several callback options are available that have different features. For callback to work, both client and server must use the same mode. The Eicon 1551 WAN Router can only function as a callback client. Choices:

- None: No callback support.
- Callback Control Protocol: This is a Microsoft-developed solution. It is used by NT4, and devices from Cisco, Ascend, and other vendors. NCP enables you to specify a time delay before the server calls back, and supports both the user specified and administrator specified options.
- ISDN Callback: Unlike the callback control protocol, the server does not answer the initial call from the Eicon 1551 WAN Router when using ISDN callback mode. Therefore, there is no charge for the call. This can be advantageous if you are making a lot of calls without a flat-rate package, or are making long distance calls. ISDN modem only works with Cisco IOS. It uses caller ID information to return the call, therefore, caller ID must be enabled on your line to use this mode.

Default: None

Callback options:

Sets the type of callback support when user specified and administrator specified options are selected. Choices:

- No Callback: No callback support.
- Administrator Specified: The Eicon 1551 WAN Router does not supply the server with a number to dial. Instead, the remote identifies the Eicon 1551 WAN Router by its caller ID or information supplied during call authentication. The server then consults a pre-configured table to determine the number to dial.
- User Specified: This option requires that the Eicon 1551 WAN Router supply the server with the callback number to use. If the server is on a PBX, or must dial long distance, the number must include the appropriate dialing prefixes. The server does not modify this number before dialing.

Callback numbers

User specified mode only. Specify the two numbers that the server uses to call back. Each number should contain the required dialing pre-fixes that the server must use. If you only have one ISDN number, enter it in both fields.

Delay before host calls back

Callback control protocol only. Sets the amount of time the server waits before calling back. The Eicon 1551 WAN Router proposes the delay during callback negotiation. The server can either accept or reject it.

Range: 1 to 30.

Default: 5.

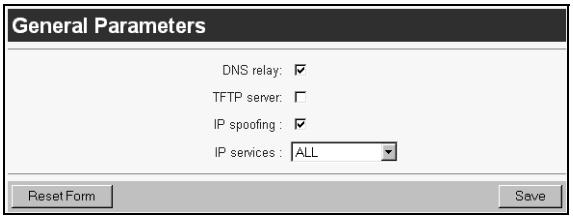
Timeout waiting for callback

Sets the amount of time the Eicon 1551 WAN Router waits for the server to call back. During this time, the Eicon 1551 WAN Router may accept incoming calls that are not from the callback server unless you activate remote authentication.

Range: 20 to 240.

Default: 30.

IP Menu



DNS Relay

Enables DNS requests.

When enabled, all DNS requests are forwarded to a remote DNS server. This is done by matching the requested domain against the domain name assigned to each profile. If a match is found, the profile is connected and the DNS request is forwarded.

Default: Enabled.

TFTP Server

Enables/disables TFTP (Trivial File Transfer Protocol).

When enabled, the Eicon 1550/1551 acts as a TFTP server and can respond to upload or download requests from TFTP clients.

Default: Disabled.

IP Spoofing

Enables/disables spoofing. When enabled, all TCP keep-alive datagrams and all Microsoft Server Message Block datagrams are spoofed. In addition, all NetBIOS over IP name service traffic is dropped.

Default: Enabled.

IP Services

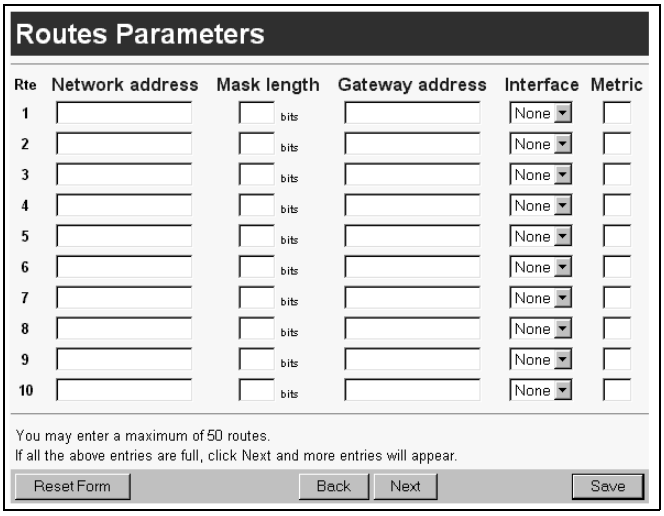
Defines the level of support provided for Microsoft NetBIOS services, which are integrated into Microsoft TCP/IP. NetBIOS is required to support Microsoft Windows Network Neighborhood, the MAP NETWORK option in Windows Explorer, and various DOS-based networking commands (such as net use, net view, and net logon). Choices:

- All: All NetBIOS traffic is forwarded to the remote site. This may result in substantial connection charges unless you have a flat rate connection, as outgoing calls will be made frequently.
- Intelligent: Provides full support for all Network Neighborhood functions, but spoofs unnecessary traffic to reduce usage.

- Minimal: Reduces NetBIOS traffic to a minimum. Does not support Network Neighborhood functions. However, the MAP NETWORK option in Windows Explorer is supported, along with DOS-based networking commands such as net use, net view, and net logon. This is the most economical solution.
- None: All NetBIOS traffic is discarded.

  Default:All

Routes Menu (IP Tree)



Network Address

Defines the IP address of a network where data should be routed. This address is compared against the destination address of all IP datagrams that pass through the Eicon 1550/1551. If a match is found, the IP datagram is routed to the profile you specify under Interface.

Data is transported in frames on an Ethernet LAN or packets on an X.25 network. This is similar to datagrams on TCP/IP networks.

Mask Length

Defines the mask associated with the network address. Mask length determines how many bits in the address are significant for routing. Each of the four decimal numbers that make up an IP address is represented by 8 bits. For example, if you specify the network address 213.119.13.1, then:

- an 8-bit mask routes on 213.0.0.0
- a 16-bit mask routes on 213.119.0.0
- a 24-bit mask routes on 213.119.13.0
- a 32-bit mask routes on 213.119.13.1

Gateway Address

This setting is used only when you select LAN for the **Interface** parameter. It enables you to route traffic to a device on the Ethernet LAN, instead of out to the external network via a profile. Usually this is the address of a gateway that provides access to another network.

Interface

Defines the profile that will be used to route data. The profile you choose should establish a connection to the proper destination so that routing is successful.

If you select LAN, data is routed to the gateway address you specify, which must be reachable on the local Ethernet LAN created by the Eicon 1550/1551.

Select NONE to disable the route.

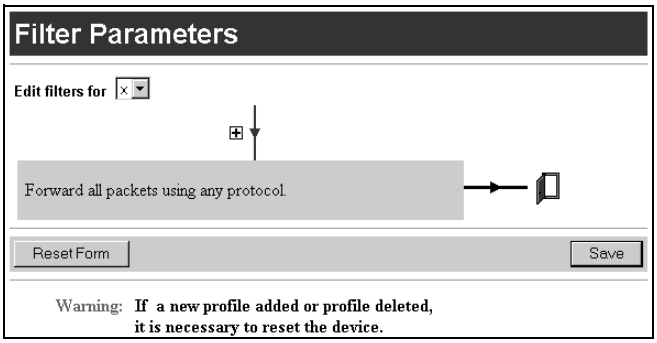
Metric

Metrics determine the weight of a route.

If two identical routes exist, then the Eicon 1550/1551 uses the route with the lower metric.

Range: 1-15. Specify 16 to indicate that the route should never be used. Default: 1.

Filters Menu (IP Tree)


Filter Parameters
Edit filters for
Forward all packets using any protocol
Reset Form
Save
Warning: If a new profile added or profile deleted, it is necessary to reset the device.

Edit filters

IP filtering provides you with the means to implement customized security, usage, and cost control measures. For example, you can define filters to do the following:

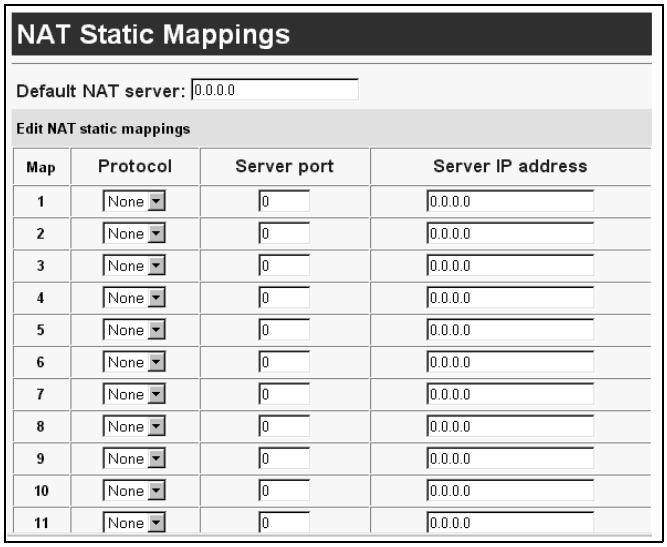
- Drop all data from a specific address or network.
- Only accept data from a specific address or network.
- Drop traffic from an application to limit usage charges.

Filters are defined in a stack. Up to 8 filters can be combined together to obtain sophisticated results. As soon as you enable a filter, all incoming and outgoing data is cascaded through the filter stack as shown by the arrows.

Any data that is not caught by a filter is passed on to the next filter in the stack. Data caught by a filter is either forwarded (green door) or dropped (red door). The final filter in the stack always drops all data.

Forwarded data continues in the direction it was originally going, either in or out. Dropped data is discarded. See **Custom Security Features using IP Filters** on page 63, for more information.

NAT Mapping Menu (IP Tree)



NAT must be enabled for each profile.

Default NAT Server

Defines the IP address of the device where all unresolved datagrams should be forwarded.

Protocol

Defines the protocol that is used. Choices:

- UDP: The server uses the UDP protocol.
- TCP*:* The server uses the TCP protocol.

Server Port

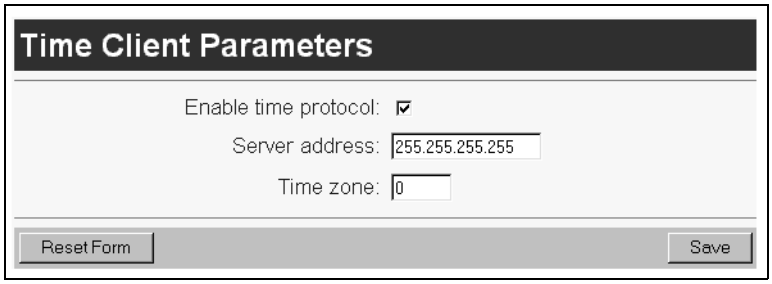
Defines the TCP or UDP port the server uses.

For example, if you are setting up an SMTP server, set **Protocol** to TCP and **Server port** to 25 (25 is the conventional SMTP port).

Server IP Address

Defines the IP address of the server.

Time Client Menu (IP Tree)



Enable Time Protocol

Enables/disables the use of the time protocol. When enabled, the Eicon 1550/1551 will periodically contact a time server in order to set its internal clock.

Default: Enabled.

Server Address

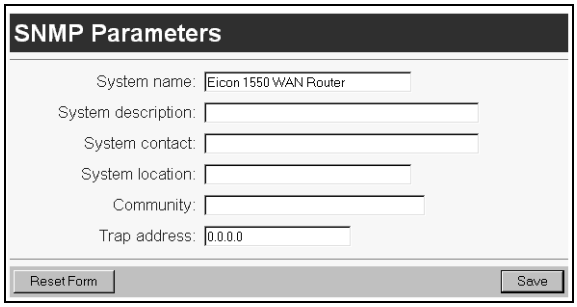
Defines the IP address of the time server the Eicon 1550/1551 should use when automatically updating its internal clock. The address 255.255.255.255 will broadcast the request to all stations on the network.

Time Zone

Defines the difference between your time zone and Greenwich Mean Time (GMT) in hours.

Range: -12 to 12. Default: 0.

SNMP Menu (IP Tree)



System Name

Defines a name for the Eicon 1550/1551. This information can be retrieved by SNMP agents.

Range: 0-29 characters.

System Description

Defines a description for the Eicon 1550/1551. This information can be retrieved by SNMP agents.

Range: 0-39 characters.

System Contact

Defines the E-mail address of the person responsible for the Eicon 1550/1551.

This information can be retrieved by SNMP agents.

Range: 0-39 characters.

System Location

Describes the physical location of the Eicon 1550/1551.

This information can be retrieved by SNMP agents.

Range: 0-29 alphanumeric characters.

Community

Defines the SNMP community name for the Eicon 1550/1551.

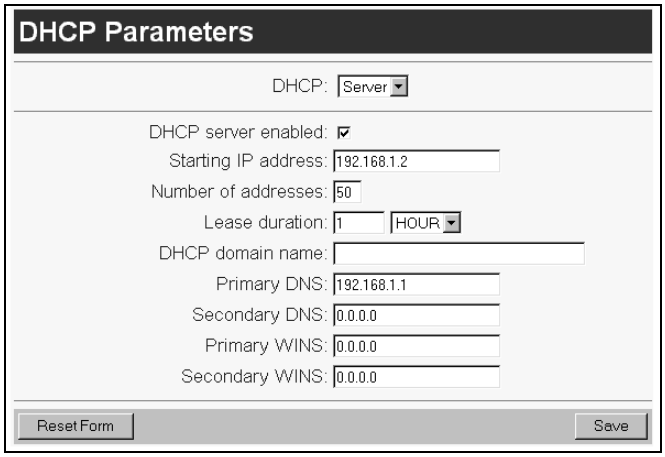
The community name acts as a password controlling SNMP read and write access to all Eicon 1550/1551 configuration settings.

Range: 0-31 characters, no spaces.

Trap Address

Defines the IP address, in dotted-decimal format, of the remote station where LAN Manager will send SNMP traps. All standard MIB II traps are supported.

DHCP Menu (IP Tree)



The parameters displayed on the DHCP page will depend on the choice of DHCP type (server, relay, or none).

DHCP

Sets the type of DHCP services the Eicon 1550/1551 should offer. By default, DHCP services are enabled (see 'DHCP Server Enabled' below).

- NONE: No DHCP services are supplied, and DHCP requests are ignored.
- SERVER: The Eicon 1550/1551 will act as a DHCP server and will assign IP addresses in response to DHCP requests by network devices.
- RELAY: The Eicon 1550/1551 will relay DHCP requests to a separate DHCP server.

DHCP Server Enabled (DHCP = Server)

When acting as a DHCP server, the Eicon 1550/1551 is responsible for assigning IP addresses when it receives a DHCP request from a network device. In other words, the Eicon 1550/1551 will assign IP addresses to each computer on the internal Ethernet LAN.

This option is enabled by default. You should not disable it unless the Eicon 1550/1551 is connected to a network that provides its own DHCP services. Note that if the Eicon 1550/1551 detects an existing DHCP server on the local network, it will de-activate its own DHCP server.

Starting IP Address (DHCP = Server)

Defines the starting IP address the Eicon 1550/1551 uses when assigning DHCP addresses.

This address must be on the same network as the Eicon 1550/1551's LAN IP address.

Default: 192.168.1.2

Number of Addresses (DHCP = Server)

Defines the maximum number of addresses in the dynamic DHCP address pool.

Range: 1-50. Default: 50.

Lease Duration (DHCP = Server)

Defines the length of time a client address (assigned by the Eicon 1550/1551) is valid.

Range: 30 minutes to 30 days. Default: 1 hour.

DHCP Domain Name (DHCP = Server)

Defines the domain name returned in response to a DHCP request, when the DHCP server is enabled.

Range: 0-31 characters, no spaces.

Primary DNS (DHCP = Server)

Defines the IP address of the primary DNS server that the Eicon 1550/1551 returns to DHCP clients, when the DHCP server is enabled. By default, the address 192.168.1.1 is returned, which is the default address of the Eicon 1550/1551.

Secondary DNS (DHCP = Server)

Defines the IP address of the secondary DNS server that the Eicon 1550/1551 returns to DHCP clients, when the DHCP server is enabled.

Primary WINS (DHCP = Server)

Defines the IP address of the primary WINS server that the Eicon 1550/1551 returns to DHCP clients, when it is acting as a DHCP server.

Secondary WINS (DHCP = Server)

Defines the IP address of the secondary WINS server that the Eicon 1550/1551 returns to DHCP clients, when it is acting as a DHCP server.

Number of Hops (DHCP = Relay)

Defines the maximum hop count supported for DHCP relay requests. If a DHCP request is received with a hop count greater than the value of this parameter, the Eicon 1550/1551 discards the request.

Range: 1-16. Default: 4.

Delay (sec) (DHCP = Relay)

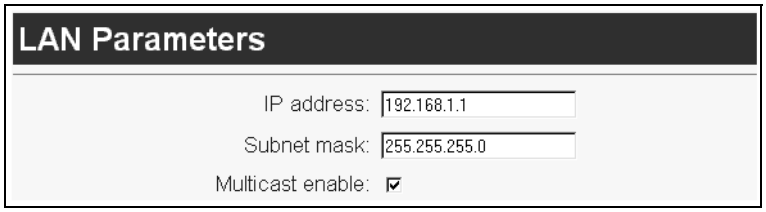
Defines how long the Eicon 1550/1551 waits before relaying a DHCP request. Since DHCP requests and responses are broadcast to all stations on a LAN, the Eicon 1550/1551 must check that no other DHCP server has responded to a DHCP request before it forwards the request to the external network.

Range: 1-30 seconds. Default: 4 seconds.

Primary / Secondary Address (DHCP = Relay)

Defines the address of the DHCP servers where DHCP requests are to be forwarded, when DHCP relay is enabled. The secondary IP address is used if the primary server is unavailable.

LAN Menu



IP Address

Defines the IP address for the Eicon 1550/1551 on the Ethernet LAN it creates. By default, this address is set to 192.168.1.1, and you should not change it. However, if you are installing the Eicon 1550/1551 on an existing LAN, you may need to change this value so that it is appropriate for your LAN setup.

Subnet Mask

Defines the subnet mask for the Eicon 1550/1551 on the Ethernet LAN it creates.

Default: 255.255.255.0.

Broadcast Enable

Enables/disables support for IP broadcasting.

Default: Disabled.

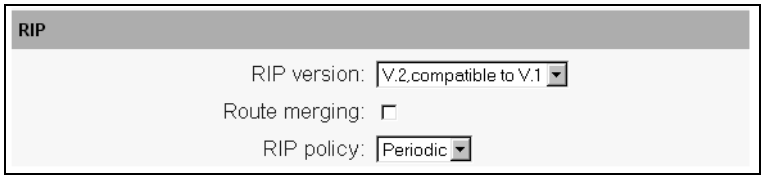
Multicast Enable

Enables/disables support for IP multicasting.

When disabled, IP multicast datagrams are not forwarded from the external network onto the internal Ethernet LAN. To allow computers on the internal LAN to subscribe to services that use IP multicasting as a delivery mechanism, you must enable this option.

Default: Enabled.

LAN Menu > RIP Group



RIP Version

Enables/disables support for RIP (Routing Information Protocol). When enabled, routing information will be exchanged with other devices.

Choices:

- Version 1: Supports RIP version 1.
- Version 2: Supports RIP version 2.
- V.2, compatible to V.1: Supports RIP version 2 that is version 1 compatible (implies broadcasting RIP-2 updates).
- Disable: Disables RIP support.

Route Merging

Enables/disables RIP route merging. When enabled, RIP merges all similar routes to reduce the routing table size and save memory.

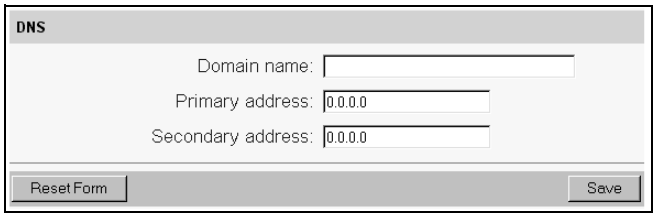
Default: Disabled.

RIP Policy

Defines how route updates, requests, and responses are managed. Choices:

- Silent: RIP accepts updates from other systems, but will not respond to requests or send updates.
- Periodic: RIP sends a complete update to all neighbors and replies to all incoming requests (LAN only). This is how RIP operates normally.

LAN Menu > DNS Group



Domain Name

When DNS relay is enabled, each DNS request is checked against this parameter. If they match, a connection defined by this profile is established, and the request is forwarded.

Range: 0-32 characters, or use * to match any name.

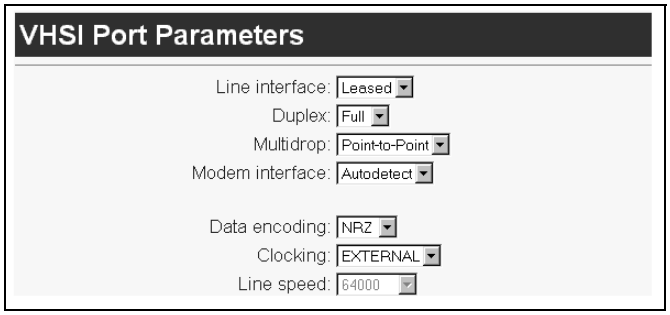
Primary Address

Defines the address of the first DNS server where DNS requests are to be sent, when DNS Relay is enabled.

Secondary Address

Defines the address of the second DNS server where DNS requests are to be sent. The secondary server is only used when the PRIMARY does not reply.

VHSI Port Menu



Line Interface

Defines the type of line connected to the VHSI port. Choices:

- Leased: The port is connected to a null-modem cable or a modem that links to a dedicated leased line.
- Dial: The port is connected to a modem that must be dialed to make a connection.

Duplex

Defines the type of device the VHSI port is connected to. Choices:

- Full: The port is connected to a full-duplex device. This is the most common case and is usually the choice for an X.25/QLLC connection.
- Half*:* The port is connected to a half-duplex device. This is most often used on an SDLC connection.

Multidrop

Defines the type of line connected to the VHSI port: point-to-point or multi-point.

Modem Interface

Defines the VHSI port interface: V.24/RS-232, V.35, V.36/RS-449/EIA-530 and X.21. Specify ‘Autodetect’ to have the Eicon 1550/1551 detect the type of interface automatically.

Data Encoding

Defines the type of data encoding used on the VHSI port.

This setting must match that of the remote system.

- NRZ: Enable Non Return to Zero encoding. Can be used for internal or external clocking.
- NRZI: Enable Non Return to Zero Inverted encoding. Can be used with internal or external clocking, and INT-DPLL (Internal Digital Phase Lock Loop) or EXT-DPLL (External Digital Phase Lock Loop) with a line speed limit of 19,200 bps.
- FM0: Enable FM0 (also known as biphase space) encoding. Can only be used with INT-DPLL clocking with a speed limit of 38,400 bps.
- FM1: Enable FM1 (also known as biphase mark) encoding. Can only be used with INT-DPLL clocking with a speed limit of 38,400 bps.

Clocking

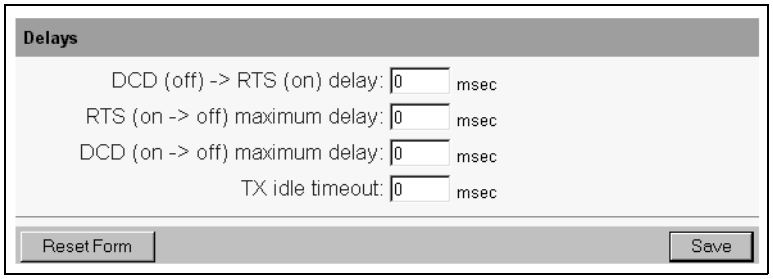
Defines how the VHSI port is clocked, which controls synchronization and the rate of data exchange on the line.

- EXTERNAL: The port uses the clock supplied by the device it is connected to (DTE) for receiving and transmitting.
- INTERNAL: The port generates an internal clock for receiving and transmitting, and outputs this clock on the interface for use by the device it is connected to (DCE).
- EXTDPLL: The port employs a DPLL that uses a DCE generated clock at 32 (NRZI) or 16 (FM) times the data rate.
- INTDPLL: The port employs a DPLL that uses an internally generated clock at 32 (NRZI) or 16 (FM) times the data rate.

Line Speed

Defines the speed at which the VHSI port operates, in bits per second (bps). Certain restrictions inherent to the network to which the Eicon 1550/1551 is connected can limit throughput. Speeds in excess of 128 kbps are possible on dedicated lines, but public X.25 networks may be as slow as 2400 bps. This parameter is used only when Clocking is set to INTERNAL. When external clocking is selected, the device providing the clock sets the line speed. Default: 64000.

VHSI Port Menu > Delays Group


Delays
DCD (off) -> RTS (on) delay: 0 msec
RTS (on -> off) maximum delay: 0 msec
DCD (on -> off) maximum delay: 0 msec
TX idle timeout: 0 msec
Reset Form
Save

DCD (off) -> RTS (on) Delay

Defines the DCD(off) -> RTS(on) delay.

This is the length of time before the remote is allowed to send at the end of reception. This parameter is intended for non-standard physical interfaces, and is for half-duplex lines only.

Range: 0-9999 milliseconds. Default: 0 (disabled).

RTS (off->on) Maximum Delay

Defines the RTS (on) -> RTS (off) maximum delay.

This is the length of time the transmitter may be active before turning the line around. This parameter is for half-duplex lines only.

Range: 0-9999 milliseconds. Default: 0 (disabled).

DCD (on->off) Maximum Delay

Defines the DCD (on) -> DCD (off) maximum delay.

This is the maximum length of time the remote device is allowed to transmit data. If this limit is exceeded the line is disconnected. This parameter is only used for half-duplex lines.

Range: 0-9999 milliseconds. Default: 0 (disabled).

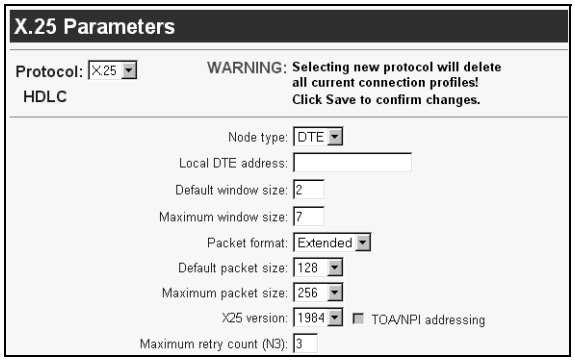
TX Idle Timeout

Defines the Tx Idle Timeout.

When the transmitter finishes sending a frame, it starts the Tx Idle Timer. If this timer expires before another frame is available for sending, the transmitter is turned off. This parameter is only used in half-duplex mode.

Range: 0-9999 milliseconds. Default: 0 (disabled).

Protocol Menu (VHSI Tree) (X.25)



These parameters are only available when the protocol is set to X.25.

Node Type

Defines if the Eicon 1550/1551 functions as DTE (Data Terminal Equipment) or DCE (Data-Circuit terminating Equipment). Consult your network subscription for the proper setting.

Default: DTE.

- DTE: Use when connected to an X.25 network, or to another computer configured as DCE.
- DCE: Use when connected to another computer configured as DTE.

Local DTE Address

Defines the X.25 DTE address assigned to the Eicon 1550/1551.

Range: 1-15 digits.

Default Window Size

Defines the default X.25 window size.

Range: 1-7. Default: 2.

Maximum Window Size

Defines the maximum X.25 window size.

Range: Default window size to 7. Default: 7.

Packet Format

Defines the type of packets supported. Consult your network subscription to see if you can make use of Extended Packet features. This parameter affects Window size.

- Basic: Supports only the standard packets used on all networks.
- Extended: Supports the use of extended clearing, call user data, and other features available only on certain networks.

Default Packet Size

Defines the default X.25 packet size.

Range: 64-1024 bytes. Default: 128 bytes.

Maximum Packet Size

Defines the maximum X.25 packet size.

Range: Default packet size to 1024 bytes. Default: 256 bytes.

X.25 Version

Defines the version of the X.25 protocol to use.

- 1984: ITU recommendation 1984
- 1988: ITU recommendation 1988

Default: 1984

TOA/NPI Addressing

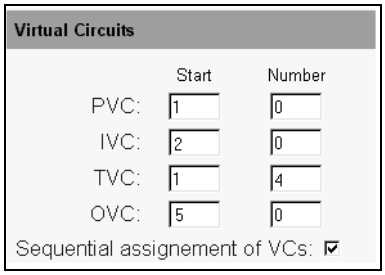
Enables/disables support for TOA/NPI addressing. This parameter only applies if the X.25 version is set to 1988.

Maximum Retry Count (N3)

Defines how many times an X.25 packet that is not being successfully received by the remote will be retransmitted.

Range: 0-99. Default: 3.

Protocol Menu (VHSI Tree) > Virtual Circuits Group (X.25)



These parameters are only available when the protocol is set to X.25.

PVC - Permanent Virtual Circuits

Defines settings for PVCs (Permanent Virtual Circuits). A PVC is permanently established between two destinations. No call setup is required.

IVC - Incoming Virtual Circuits

Defines settings for IVCs (Incoming Virtual Circuits). An IVC can only receive calls.

TVC - Two-way Virtual Circuits

Defines the settings for TVCs (Two-way Virtual Circuits). A TVC can both make and receive calls.

OVC - Outgoing Virtual Circuits

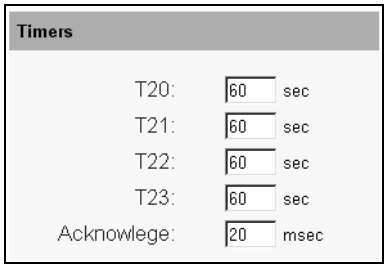
Defines the settings for OVCs (Outgoing-only Virtual Circuits). An OVC can only issue calls and not receive them.

Sequential Assignment of VCs

Enables/disables sequential assignment of virtual circuits. Most X.25 networks assign virtual circuits sequentially. However, some networks, such as British Telecom's Packet Switch Stream, assign virtual circuits non-sequentially using Logical Channel Group numbers. If this is the case, you must define the starting LCN (Logical Channel Number) for each group of virtual circuits (PVC, IVC, TVO, and OVC).

Default: Enabled.

Protocol Menu (VHSI Tree) > Timers Group (X.25)



These parameters are only available when the protocol is set to X.25.

T20 - Packet Level Restart Timer

The Packet Level Restart Timer is started when a Restart Request packet is sent. It is stopped when a Restart Confirm or Restart Request packet is received. On expiration, the Packet Level interface is closed.

Range: 0-999 seconds. Default: 60.

T21- Call Supervision Timer

The Call Supervision Timer is started when a Call Request packet is sent. It is stopped when a Call Accepted or Call Cleared packet is received. On expiration, a Clear Request packet is sent.

Range: 0-999 seconds. Default: 60.

T22 - Reset Supervision Timer

The Reset Supervision timer is started when a Reset Request packet is sent. It is stopped when a Reset Confirmed or Reset Request packet is received. On expiration, the Reset Request packet is retransmitted.

Range: 0-999 seconds. Default: 60.

T23 - Clear Supervision Timer

The Clear Supervision Timer is started when a Clear Request packet is sent. It is stopped when a Clear Indication or Clear Confirmation is received. On expiration, the Clear Request packet is retransmitted.

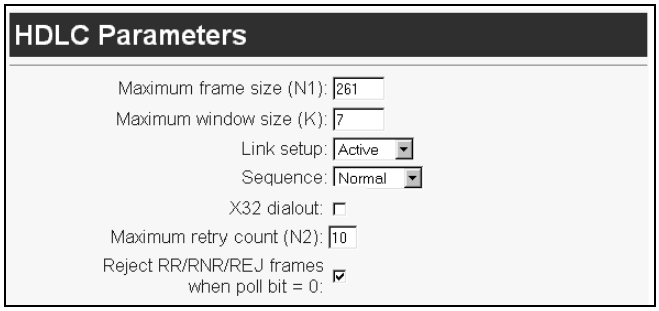
Range: 0 to 999 seconds. Default: 60.

Acknowledge Timer

Defines the Acknowledge Timer, which is how long, in milliseconds, the line can remain idle before an RR (Receiver Ready) is sent to the remote. This lets the remote know that the connection is still active. The remote will respond with an RR.

Range: 0-9999. Default: 20.

HDLC Menu (VHSI Tree) (X.25)


HDLC Parameters
Maximum frame size (N1): 261
Maximum window size (K): 7
Link setup: Active
Sequence: Normal
X32 dialout:
Maximum retry count (N2): 10
Reject RR/RNR/REJ frames when poll bit = 0:

Note: *The HDLC menu is only accessible through the Protocol page, when the protocol is set to X.25.*

Maximum Frame Size N1

Defines the maximum frame size.

This parameter can generally be determined by adding 5 to the Maximum Packet Size. However, if your Maximum Packet Size is less than 256, and you are using the Fast Select feature, then find the size, in bytes, of the following parameters and add them together:

- Direct Header (1)
- HDLC Packet Header (2, or 3 for extended sequence)
- X.25 Packet Header (3, or 4 for extended sequence)
- DTE Address Length (1)
- DTE Address (0 to 15)
- Facility Length (1)
- Facilities (0-63)
- User Data (0-16)
- Fast Select
- Client Data (0-128)

If the exact value cannot be calculated, this parameter can be set to a higher value than needed. For example, if set to 261, it will accommodate any packet size up to 256 bytes.

Connections using the X.25 protocol use the HDLC protocol at a lower level. As a result, the valid ranges and default values may vary as follows:

HDLC only:

- Range: 1-8194.
- Default: 1504.

X.25 over HDLC:

- Range: (X.25 Max Packet Size + 5) - 1029.
- Default: 144.

Maximum Window Size K

Defines the Maximum Window Size, which is the number of frames that are to be sent before the Eicon 1550/1551 waits for an acknowledgment from the remote device. In certain situations, you may wish to define a large window size (with satellite networks that have significant transmission delays, for example). The maximum window size can never be exceeded, and it must match on both sides of the link.

Range: 1-7, or 1-127 if Extended Sequence Mode is enabled. Default: 7

Extended Sequence Mode is defined with the 'Sequence' parameter.

Link Setup

Defines how the HDLC Link setup procedure is handled. Applies only if a DTE port has been configured.

- Active: The Eicon 1550/1551 will initiate the setup procedure. This option is generally used with DTE addressing.
- Passive: The Eicon 1550/1551 will wait for the remote device to initiate the setup procedure.

  Default: Active

Sequence

In 1984, the CCITT added an Extended Sequence definition to the X.25 specification. These features are useful for networks with long transmission delays, such as satellite networks. Consult your network provider to see if you can make use of Extended Sequence features. This parameter increases the range of values available for Maximum Window Size.

- Normal: Sets the range for Maximum Window Size to 1-7. Use for most networks.
- Extended: Sets the range for Maximum Window Size to 1-127. Use for networks supporting the Extended Sequence definition.

Default: Normal.

X32 Dialout

Enables/disables X.32 dialout. Default: Disabled.

Maximum Retry Count (N2)

Defines the Maximum Retry Count, which is the limit to the number of retries made when a particular frame meets with repeated negative acknowledgments from the remote device.

Range: 1-99. Default: 10.

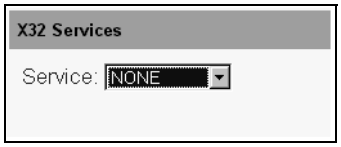
Reject RR/RNR/REJ Frames

Enables/disables rejection of RR/RNR/REJ frames that have their poll bit set to 0. Certain networks use the HDLC poll bit in a non-standard manner and require special handling of the three frame types:

- RR (receiver ready) frames
- RNR (receiver not ready) frames
- REJ (reject) frames

Normally, when any of these three frames are received as commands with the poll bit set to 0, they are rejected. Non-standard networks may not want these frames to be rejected.

HDLC Menu (VHSI Tree) > X.32 Services Group (X.25)



Note: *The HDLC menu is only accessible through the Protocol page, when the protocol is set to X.25.*

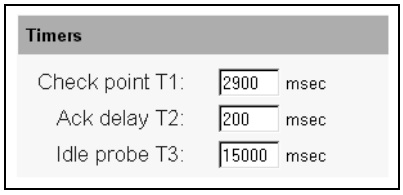
Service

Variations of the HDLC protocol expand upon the protocol to provide additional information to the host and client systems.

Default: None.

- None: Standard implementation of HDLC.
- Eripax: A variation of HDLC made to work on Ericsson private networks. The ERIPAX XID helps identify you to other network clients even when you are using a dial-up line.
- CCITT: A CCITT standard variation of the HDLC protocol providing parameters to help identify you to other network clients even when you are using a dial-up line.
- Transpac: A variation of HDLC made to work on the Transpac network in France. The Transpac ID and SID parameters identify you to other network clients even when you are using a dial-up line.

HDLC Menu (VHSI Tree) > Timers Group (X.25)



The HDLC menu is only accessible through the Protocol page, when the protocol is set to X.25.

Checkpoint T1

Defines the Check Point Timer, which specifies how long to wait for a response from the remote device before an attempt is made to determine its status. This parameter should be set to slightly greater than twice the transmission time of the longest frame.

Range: 200-9999 milliseconds. Default: 2900 milliseconds.

Ack Delay T2

Defines the Ack Delay Timer.

To optimize communications efficiency, acknowledgments can be piggy-backed onto outgoing frames rather than being sent out on their own. The Ack Delay Timer defines the length of time the device should wait for an outgoing information frame, before sending the acknowledgement by itself. This setting (T2) should always be much less than the Check Point Timer (T1) otherwise, the remote device may time out and try to recover before the acknowledgment is received.

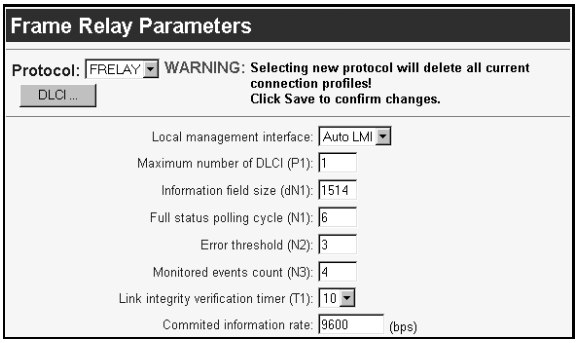
Range: 0-9999 milliseconds. Default: 200 milliseconds.

Idle Probe T3

Defines the Idle Probe Timer, which specifies how long the link should remain idle before the Eicon 1550/1551 sends an RR (Receiver Ready) frame, with a P bit set, to the remote device. This is done in order to determine its status. The remote device, if still functioning, will respond using an RR frame with the F bit set.

Range: 0-99999 milliseconds. Default: 15000 milliseconds.

Protocol Menu (VHSI Tree) (Frame Relay)


Frame Relay Parameters
Protocol: FRELAY
WARNING: Selecting new protocol will delete all current connection profiles!
Click Save to confirm changes.
DLCI ...
Local management interface: Auto LMI
Maximum number of DLCI (P1): 1
Information field size (dN1): 1514
Full status polling cycle (N1): 6
Error threshold (N2): 3
Monitored events count (N3): 4
Link integrity verification timer (T1): 10
Commited information rate: 9600 (bps)

These parameters are only available when the protocol is set to Frame Relay.

Local management interface

Defines the Local Management Interface (LMI) protocol supported on the network. LMI is a protocol and associated procedures operating on the local interface between the machine user and the network. LMI provides management of Data Link Connection Identifiers (DLCI), which have their endpoints and bearer capabilities defined at subscription time. Pre-ANSI LMI is older, and ANSI T1.617 Annex D is newer. Networks usually support one or the other.

- ANNEXA: ITU-T Q.933 Annex A
- ANNEXD: ANSI T1.617 Annex D Local In-channel Signaling.
- AUTOLMI: Automatically detects which LMI protocol is in use, in the following order: Annex D, LMI, Annex A, None.
- LMI: Pre-ANSI LMI protocol.
- NONE: No LMI protocol selected. If LMI is set to none, you are not required to configure the settings LMIN1, LMIN2, LMIN3, and LMIT1.

Default: AUTOLMI.

Maximum number of DLCI (P1)

Defines the maximum number of Permanent Virtual Connections (analogous to X.25 PVCs) that can be active simultaneously. Once allocated, each DLCI can be changed to reflect the DLCI assigned at subscription time.

Range: 1-8.

Default: 5.

Information field size (dN1)

Defines the maximum number of bytes of user data that can be contained in a Frame Relay frame.

Range: 19-4096.

Default: 1514.

Full status polling cycle (N1)

Defines the number of polling cycles before a Full Status Report is requested. A polling cycle is a Status Enquiry and Status message exchange. This setting determines the time the user device takes to recognize a change in status on a DLCI from the Frame Relay network. This may include the addition or deletion of a DLCI by the network.

Range: 1-255.

Default: 6.

Error threshold (N2)

Defines the maximum number of Reliability Errors and/or Protocol Errors that can occur during a sliding Monitored Events Count, before a Frame Relay connection is declared inactive. This parameter should always be less than or equal to the Monitored Events Count.

Range: 1-10.

Default: 3.

Monitored events count (N3)

Defines the Monitored Events Count, which is the number of successful polling cycles required before the Frame Relay port can be declared active. If the port has been declared inactive, the network waits the specified number of monitored events before declaring it active again.

Range: 1-10.

Default: 4.

Note: *Note: For a DLCI to be declared inactive, the amount defined for N2 (Reliability Errors and/or Protocol Errors) must be reached within the specified number of monitored events. This prevents transient conditions from declaring a DLCI inactive.*

Link integrity verification timer (T1)

Defines how frequently the Eicon 1530 WAN Router should initiate a Status Enquiry message. This timer must be set to less than the timer used by the Frame Relay Network to verify that the Eicon 1530 WAN Router is sending Status Enquiry messages. To determine the Frame Relay Network timer value, contact your network administrator.

Possible values: 5, 10, 15, 20, 25, 30 (seconds).

Default: 10 seconds.

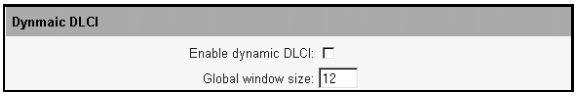
Committed information rate

Defines the Committed Information Rate (CIR) in bits per second. The CIR is the rate at which the network transfers information under normal conditions. The service provider typically sets pricing based on the CIR (including other criteria) with rate guarantees.

Range: 2400-2048000.

Default: 9600.

Protocol Menu (VHSI Tree) > Dynamic DLCI Group (Frame Relay)



These parameters are only available when the protocol is set to Frame Relay.

Enable Dynamic DLCI

Defines the DLCI mode.

Enabled: Enables dynamic configuration of new DLCIs for this connection. Dynamic DLCI (also referred to as "DLCI discovery") eliminates the need for static configuration of new DLCIs. All previously configured DLCIs for this connection are removed. Dynamic DLCI is performed automatically by the Frame Relay Bearer Service, so you do not have to configure a separate DLCI for each Permanent Virtual Circuit in your Frame Relay network.

Disabled: Enables static configuration of new DLCIs for this connection. In this mode, each DLCI must be defined manually.

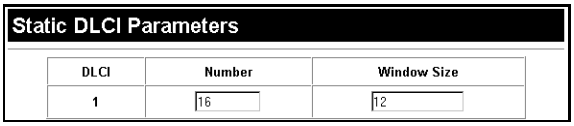
Global window size

Defines the Frame Relay window size for all discovered DLCIs on a given Frame Relay connection, which determines the number of packets that can be sent before waiting for an acknowledgment. Only applicable if Dynamic DLCI is enabled. Used for transmission buffer control.

Range: 1-255.

Default: 12.

Static DLCI Menu (VHSI Tree) (Frame Relay)



These parameters are only available when the protocol is set to Frame Relay.

Number

Defines a Data Link Connection Identifier (DLCI).

A DLCI is the Frame Relay equivalent of a hardware address, associated with an established Permanent Virtual Circuit (PVC).

Range: 16-1007.

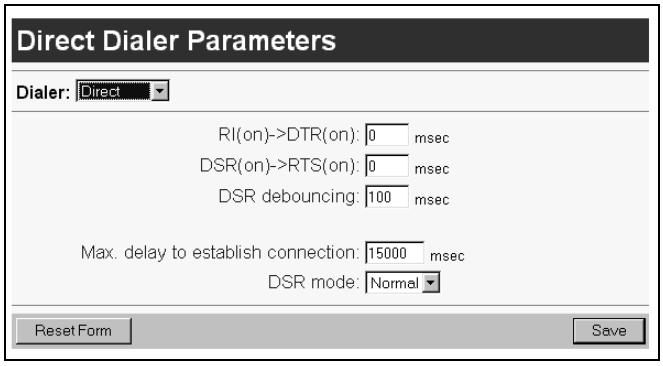
Window Size K

Defines the Frame Relay window size for the specified DLCI.

Range: 1-255.

Default: 12.

Dialer Menu (VHSI Tree) > Direct Dialer



Dialer

This allows you to change the direct dialer.

Options: Direct, Hayes AT, and V.25Bis.

RI (on) -> DTR (on)

Defines the RI(on) -> DTR(on) delay.

Range: 0-9999 milliseconds. Default: 0 milliseconds.

DSR(on) -> RTS (on)

Defines the DSR(on) -> RTS(on) delay.

Range: 0-9999 milliseconds. Default: 0 milliseconds.

DSR Debouncing

Defines the DSR debouncing delay.

Range: 0-999 milliseconds. Default: 100 milliseconds.

Max Delay to Establish Connection

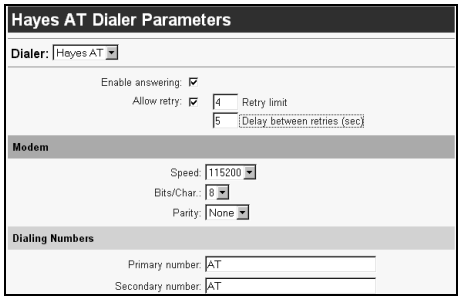
Defines the maximum delay for establishing a connection.

Range: 15000-65000 milliseconds. Default: 15000 milliseconds.

DSR Mode

Defines the DSR mode as Normal or Ignore. Default: Normal.

Dialer Menu (VHSI Tree) > Hayes AT Dialer



Note: *These options appear when the dialer option is set to Hayes AT.*

Enable answering

Enables/disables answering of incoming calls by the modem (DCE) connected to the port. When enabled, the modem will automatically answer incoming calls.

Allow retry

Specifies if the modem should redial if the primary number is busy or does not respond. If enabled, the secondary number will be redialed. If the secondary number is not defined, the primary number will be redialed.

Retry limit

Defines the maximum number of dialing attempts to be made when a busy or unresponsive phone number is encountered. If a secondary number is defined, the dialer will alternate between the primary and secondary numbers until a call is successfully completed or until the retry limit is reached. Each time the primary or secondary number is dialed this counts as a retry attempt. For example, specifying 6 allows the primary and the secondary number to be dialed a maximum of three times each.

Range: 1-9. Default: 4.

Delay between retries

Defines the delay before redialing.

Range: 0-65 seconds. Default: 5.

Speed

Defines the maximum rate in bits per second (bps) at which the dialer, while in command mode, communicates with the modem connected to the port. This parameter is used in asynchronous mode only and allows call setup commands to be issued before a connection is established with an external modem.

Possible values: 1200, 2400, 4800, 7200, 9600, 12000, 14400, 19200, 38400, 57600, 115200, 230400. Default: 115200.

Bits/Char

Defines the number of bits used to represent a character. Set this parameter to the same value as on the modem connected to the port. This parameter is used in asynchronous mode only and allows for call setup commands to be issued before a connection is established with an external modem.

Possible values: 7 or 8. Default: 8.

Parity

Defines the method of parity error checking used. Both ends of the connection must be to the same value. This parameter is used in asynchronous mode only and allows call setup commands to be issued before a connection is established with an external modem.

Primary Number

Defines the primary phone number to dial.

If the primary number is busy or otherwise non-responsive, the secondary number is then dialed. If a secondary number is not defined, the primary number is retried.

When entering the phone number, you must include the characters "AT" followed by a tone or pulse dial indicator (DT or DP), then the telephone number. The AT prefix is a Hayes-standard way of communicating with a modem. For example:

- ATDT 555-5555 dials the number 555-5555 using a tone dial.
- ATDP 555-5555 dials the same number using a pulse dial.

Secondary Number

Defines the phone number to dial if the primary number is busy or otherwise non-responsive.

If a secondary number is not defined, the primary number is used again.

When entering the phone number, you must include the characters "AT" followed by a tone or pulse dial indicator (DT or DP), then the telephone number. The AT prefix is a Hayes-standard way of communicating with a modem. For example:

- ATDT 555-5555 dials the number 555-5555 using a tone dial.
- ATDP 555-5555 dials the same number using a pulse dial.

Max Delay to establish connection

Defines the maximum delay permitted between dialing a number and achieving a successful connection. This delay includes the dialing and handshake time between external modems. If this timer is exceeded, the call is abandoned.

Range: 15-65 seconds. Default: 30.

Hangup delay

Defines the amount of time after the line is disconnected before a new command can be issued. This is used to give the modem enough time to prepare to accept other commands.

Range: 0-65 seconds. Default: 2.

DSR on->off (transition delay)

Defines the maximum delay for Data Set Ready (DSR) to be set to OFF after Data Terminal Ready (DTR) is set to OFF. Normally DTR is set to OFF upon a disconnection request.

Range: 0-65 seconds. Default: 2.

RI to DTR delay

Defines the amount of time permitted between receipt of a ring signal detection and the issuance of Data Terminal Ready (DTR) ON. If this delay is exceeded, the call is abandoned. This value must not exceed the value for max delay between rings.

Range: 0-30000 milliseconds. Default: 1000.

DSR delay

Defines how long Data Set Ready (DSR) must be lost to determine that there has been a valid loss of carrier, not just a temporary fluctuation. A valid loss of DSR usually means the modem will hang up.

Range: 0-10000 milliseconds. Default: 1500.

Max delay between rings

Defines the permitted delay between rings. If this timer is exceeded, it is assumed that the caller has hung up.

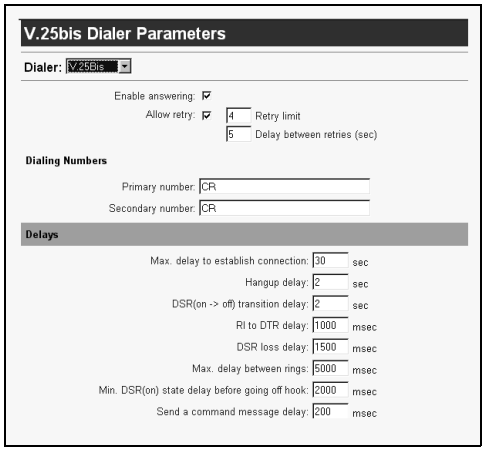
Range: 1-9000 milliseconds. Default: 5000.

Min DSR state delay before going off the hook

Defines the delay between switching from asynchronous to synchronous mode. When this timer is exceeded the modem is placed off-hook.

Range: 0-4000 milliseconds. Default: 2000.

Dialer Menu (VHSI Tree) V.25bis


V.25bis Dialer Parameters
Dialer: V.25bis
Enable answering:
Allow retry:
4 Retry limit
5 Delay between retries (sec)
Dialing Numbers
Primary number: CR
Secondary number: CR
Delays
Max. delay to establish connection: 30 sec
Hangup delay: 2 sec
DSR(on -> off) transition delay: 2 sec
RI to DTR delay: 1000 msec
DSR loss delay: 1500 msec
Max. delay between rings: 5000 msec
Min. DSR(on) state delay before going off hook: 2000 msec
Send a command message delay: 200 msec

Note: *These options appear when the dialer option is set to V.25bis.*

Enable answering

Enables/disables answering of incoming calls by the modem (DCE) connected the port. When enabled, the modem will automatically answer incoming calls.

Default: Enable.

Allow retry

Specifies if the modem should redial if the primary number is busy or otherwise does not respond. If you enable this option, the secondary number, if defined, will be redialed. If the secondary number is not defined, the primary number will be redialed.

Retry limit

Defines the maximum number of dialing attempts to be made when a busy or unresponsive phone number is encountered. If a secondary number is defined, the dialer will alternate between the primary and secondary numbers until a call is successfully completed or until the retry limit is reached. Each time the primary or secondary number is dialed counts as a retry attempt. For example, specifying 6 allows the primary and the secondary number to be dialed a maximum of three times each.

Range: 1-9. Default: 4.

Delay between retries

Defines the delay before redialing, in seconds.

Default: 5

Primary number

Defines the primary phone number to dial. If the primary number is busy or otherwise non-responsive, the secondary number is dialed. If no secondary number is defined, the primary number is used again.

The phone number must include the characters "CR" followed by a prefix, and then the telephone number. The choice of prefix depends on the operation of the local Data Circuit-terminating Equipment (DCE). Normally, the N option is used. Note that the V.25bis DCE will not dial if one of these prefixes is not properly chosen.

The following prefixes are available:

- N: The primary telephone number for the modem to dial.
- I: The primary telephone number provided with an identification number.
- S: The memory address for the modem to refer to.

Example: CRN5551234.

Max delay to establish connection

Defines the maximum delay permitted between dialing a number and achieving a successful connection. This delay includes the dialing and handshake time between external modems. If this timer is exceeded, the call is abandoned.

Range: 15-65 seconds. Default: 30.

Hangup delay

Defines the amount of time after the line is disconnected before a new command can be issued. This is used to give the modem enough time to prepare to accept other commands.

Range: 0-65 seconds. Default: 2.

DSR (on->off) transition delay

Defines the maximum delay for Data Set Ready (DSR) to be set to OFF after Data Terminal Ready (DTR) is set to OFF. Normally DTR is set to OFF upon a disconnection request.

Range: 0-65 seconds. Default: 2.

RI to DTR delay

Defines the amount of time between receipt of ring signal detection and the issuance of Data Terminal Ready (DTR) on. If this delay is exceeded, the call is abandoned. This delay must not exceed the value for SET V25BIS RING.

Range: 0-30000 milliseconds. Default: 1000.

DSR loss delay

Defines how long Data Set Ready (DSR) must be lost to determine that there has been a valid loss of carrier, not just a temporary fluctuation. A valid loss of DSR usually means the modem will hang up.

Range: 0-10000 milliseconds. Default: 1500.

Max delay between rings

Defines the permitted delay between rings. If this timer is exceeded, it is assumed that the caller has hung up.

Range: 1-9000 milliseconds. Default: 5000.

Min DSR (on) state delay before going off hook

Defines the delay before going into data transfer mode.

Range: 0-4000 milliseconds. Default: 2000.

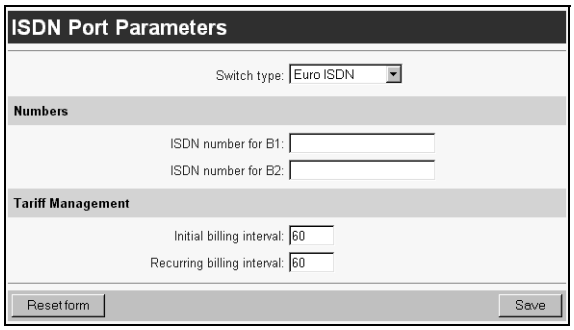
Send a command message delay

Defines the delay between sending a command message to the V.25bis modem and its acceptance. If this timer is exceeded then the command message is returned with an error code.

Range: 200-4000 milliseconds. Default: 200.

ISDN Port Menu (Eicon 1551 only)

Note: *The following pages refer to the ISDN feature available **only** with the Eicon 1551 WAN Router.*



Switch type

Specifies the type of ISDN switch used by your ISDN service provider.

Choices (International firmware)

- Europe: Euro ISDN
- UK: British Telecom. If you are in the UK, and Euro ISDN does not seem to work, try this option. It provides support for an older British Telcom switch that is still in use in some areas.
- TPH: Microlink (TPH1962/TS013)
- Japan: INS-Net64: INS-Net64
- China: China ISDN
- Singapore: Singapore ISDN

Default: Euro

ISDN number for B1

Specifies the first local ISDN telephone number.

Enter 20 digits followed by a dot followed by a 20 digit subaddress (optional).

Note that the following three characters will be removed after the number is entered: hyphen, space, parenthesis.

ISDN number for B2

Specifies the second local ISDN telephone number.

Enter 20 digits followed by a dot followed by a 20 digit subaddress (optional).

Note that the following three characters will be removed after the number is entered: hyphen, space, parenthesis.

Initial billing interval

Sets the minimum amount of time that an ISDN channel will be enabled.

Range: 0-1800 seconds. Default: 60 seconds.

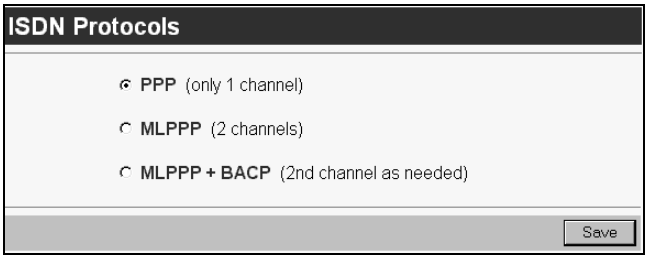
Recurring billing interval

Sets the minimum amount of time that an ISDN channel remains enabled after the initial billing interval is surpassed.

Range: 10-1800 seconds. Default: 60 seconds.

ISDN Menu > Protocols

Note: *The following pages refer to the ISDN feature available **only** with the Eicon 1551 WAN Router.*



Each option is described in the following table. For background information on ISDN concepts, see **Important ISDN Concepts** on page 125.

PPP	Only one ISDN B-channel (64 Kbps) is used by the Eicon 1551 when the ISDN port is used. This leaves the other B-channel free to be used for other purposes.
MLPPP	With MLPPP (Multilink PPP), both ISDN B-channels are used at the same time, creating a single 128 kbps PPP communications link. Both B-channels remain in use as long as the connection is active, which may result in excessive ISDN connection charges if the link is frequently idle.
MLPPP+BACP	MLPPP+BACP works in a similar way to MLPPP, as both B-channels are combined into a single 128 kbps link. However, the Eicon 1551 uses BACP (Bandwidth Allocation Control Protocol) to open or close the second ISDN B-channel as the traffic volume warrants. This reduces your communications charges by ensuring that two ISDN channels are never active when one is sufficient. When the ISDN line is open, however, one B-channel is always in use.

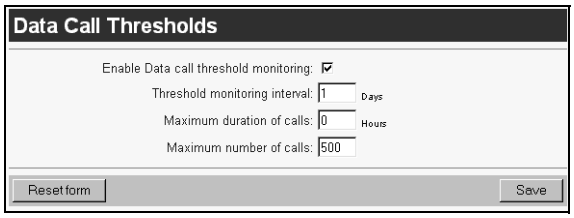
Important ISDN Concepts

This section describes important ISDN concepts. Understanding these concepts will help you decide how to choose the protocol for your Eicon 1551 for optimal performance and cost savings.

ISDN channels	ISDN lines are defined in terms of *channels*, with each channel supporting a specific type of communication. The Eicon 1551 supports two ISDN channel types: **D-channel:** The D-channel is used to control the setup of ISDN connections on the B-channels. The D-channel has a transmission speed of 16 kbps. **B-channel:** B-channels are used to carry data or voice traffic and have a transmission speed of 56 or 64 kbps.
ISDN access interfaces	An access interface is the physical connection between you and an ISDN network. It defines the number of D- and B-channels that are available to you and the total transmission speed of the connection. The Eicon 1551 supports a single Basic Rate Interface (BRI), which is comprised of one D-channel (16 kbps) and two B-channels (64 kbps) for a total user bit rate of 144 kbps.
ISDN channel usage	All connections, both data and voice, are carried on the B-channels. The Eicon 1551 dynamically assigns B-channels on demand. Therefore, there is no guarantee which B-channel a specific connection will receive. The same is true for your ISDN phone numbers. Your first phone number does not necessarily map to ISDN channel B1.

ISDN Menu > Call Thresholds

Note: *The following pages refer to the ISDN feature available **only** with the Eicon 1551 WAN Router.*



Enable data call threshold monitoring

Enables/disables ISDN threshold monitoring. When enabled, the Eicon 1551 WAN Router limits usage of the ISDN line for each profile during the specified threshold monitoring interval. This reduces ISDN usage charges.

When a profile exceeds a threshold limit, all ISDN profiles are disabled. The Eicon 1551 WAN Router must be reset in order to reactivate these profiles. This also resets the threshold interval.

To determine if a profile has been disabled, click ‘Connection’ from the main menu.

Threshold monitoring interval

Defines the maximum number of days in the interval.

Range: 1-31 days. Default: 1 day.

Maximum duration of calls

Defines the maximum number of hours a profile can be connected during the threshold monitoring interval.

Range: 0 (disabled), 1 to 24* (number of days in threshold monitoring interval) Default: 0.

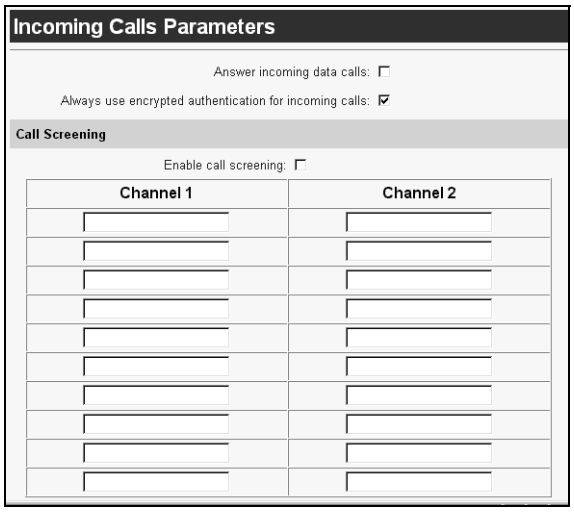
Maximum number of calls

Defines the maximum number of calls a profile can make during the threshold monitoring interval.

Range: 0 (disabled), 1 to 1000. Default: 500.

ISDN Menu > Incoming Calls

Note: *The following pages refer to the ISDN feature available **only** with the Eicon 1551 WAN Router.*



Answer incoming data calls

Specifies if the Eicon 1551 will answer incoming ISDN data calls. If disabled, incoming data calls are ignored. Default: Disabled.

Always use encrypted authentication for incoming calls

Enables/disables using encrypted authentication for incoming calls. Default: Enabled.

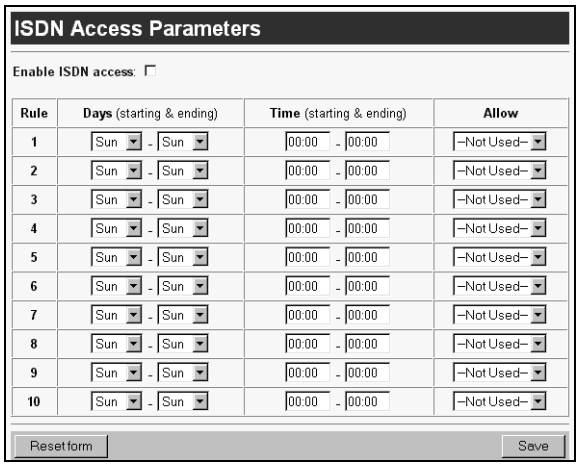
Enable call screening

Enables/disables ISDN call screening. When enabled, an incoming data call is only accepted if its number appears in the call screening table.

Calls can be screened for each ISDN number assigned to the Eicon 1551 WAN Router.

ISDN Menu > ISDN Access Parameters

Note: *The following page refers to the ISDN feature available **only** with the Eicon 1551 WAN Router.*


ISDN Access Parameters
Enable ISDN access:
Rule
Days (starting & ending)
Time (starting & ending)
Allow
1 Sun - Sun 00:00 - 00:00 --Not Used--
2 Sun - Sun 00:00 - 00:00 --Not Used--
3 Sun - Sun 00:00 - 00:00 --Not Used--
4 Sun - Sun 00:00 - 00:00 --Not Used--
5 Sun - Sun 00:00 - 00:00 --Not Used--
6 Sun - Sun 00:00 - 00:00 --Not Used--
7 Sun - Sun 00:00 - 00:00 --Not Used--
8 Sun - Sun 00:00 - 00:00 --Not Used--
9 Sun - Sun 00:00 - 00:00 --Not Used--
10 Sun - Sun 00:00 - 00:00 --Not Used--
Reset form
Save

Enable ISDN Access

Enable/disable support for ISDN access time.

When enabled, Eicon 1551 WAN Router restricts incoming and outgoing data calls based on the settings in the table above.

Selecting an Interface Cable

The interface cable for the VHSI port is not included with your package. Cables can be ordered separately from Eicon Networks Corporation, or you can construct one yourself using the specifications contained in this section.

- **Interface Cables available from Eicon Networks Corporation** 130
- **Interface Cable Specifications** 131
- **The V.24 Interface** 133
- **The V.35 Interface** 135
- **The EIA-530 Interface** 137
- **The V.36/RS-449 Interface** 139
- **The X.21 Interface** 141

Interface Cables available from Eicon Networks Corporation

The Eicon 1550/1551 can connect to Customer Service Units (CSUs) or Data Service Units (DSUs) which support one of the V.24, V.35, EIA-530, V.36, or X.21 interfaces, including compatible Eicon Networks Corporation Eiconcards (such as the C series) using a V.24 cable.

The following table lists the most common connections supported by the VHSI port, and specifies the part number of the required Eicon Networks Corporation cable. For information on making your own cables, see “Interface Cable Specifications” on page 131.

Interface	Connection	Part #
V.24/RS-232	to V.24 DCE	300-077
	to V.24 DTE	300-078
V.35	to V.35 DCE	300-076
	to V.35 DCE (France)	300-083
EIA-530	to EIA-530 DCE	300-080
V.36/RS-449	to V.36/RS-449 DCE	300-079
X.21	to X.21 DCE	300-081

To use an interface, simply connect the appropriate cable. The Eicon 1550/1551 recognizes the cable and automatically configures the port for that interface. Consult the documentation which came with your networking software for more information about port configuration.

Interface Cable Specifications

This section describes the specifications for each interface supported on the Eicon 1550/1551.

If you plan to construct your own VHSI cables, be sure to observe the guidelines given below.

Cable Specifications

Interface	Standard	Compatibility
V.24/RS-232	CCITT V.24	Signaling
	CCITT V.28	Electrical
	CCITT X.21bis	Electrical and signaling
	EIA RS-232-C	Electrical and signaling
	ISO 2110	Connector type for the DCE side of a V.24 VHSI Modem Cable
V.35	CCITT V.28	Some signals for electrical
	CCITT V.35	Some signals for electrical and signaling
	ISO 2593	Connector type for the DCE side of a V.35 VHSI Modem Cable
EIA-530	RS-422	Electrical
	RS-423	Electrical
	ISO 2110	Connector type for the DCE side of a EIA-530 VHSI Modem Cable
V.36/RS-449	CCITT V.10	Electrical
	CCITT V.11	Electrical
	RS-422	Electrical
	RS-423	Electrical
	ISO 4902	Connector type for the DCE side of a V.36/ RS-449 VHSI Modem Cable
X.21	CCITT X.21	Signaling
	CCITT V.11	Electrical
	CCITT X.27	Electrical
	EIA RS-422-A	Electrical
	ISO 4903	Connector type for the DCE side of an X.21 VHSI Modem Cable

Wire Gauge, Grounding, and Pairing

- Use 28 AWG 7-strand wire with 0.020-0.028 insulation.
- The chassis must be grounded both by a drain wire and by the braid; both must be connected to the connector case and shell at each end of the cable. The braid must be connected through its full circumference.
- Wires identified under the heading ‘Twisted Pairs’ must be paired. If you do not install twisted pairs correctly, the cable will not work.

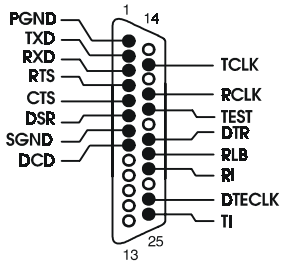
Type of Connectors

The VHSI port accepts a high density 36-pin male cable connector. The types of connectors used on the interface-specific end of the cable are as follows:

- V.35: Type M
- V.24: DB25
- V.36/RS-449: DB37
- EIA-530: DB25
- X.21:DB-15

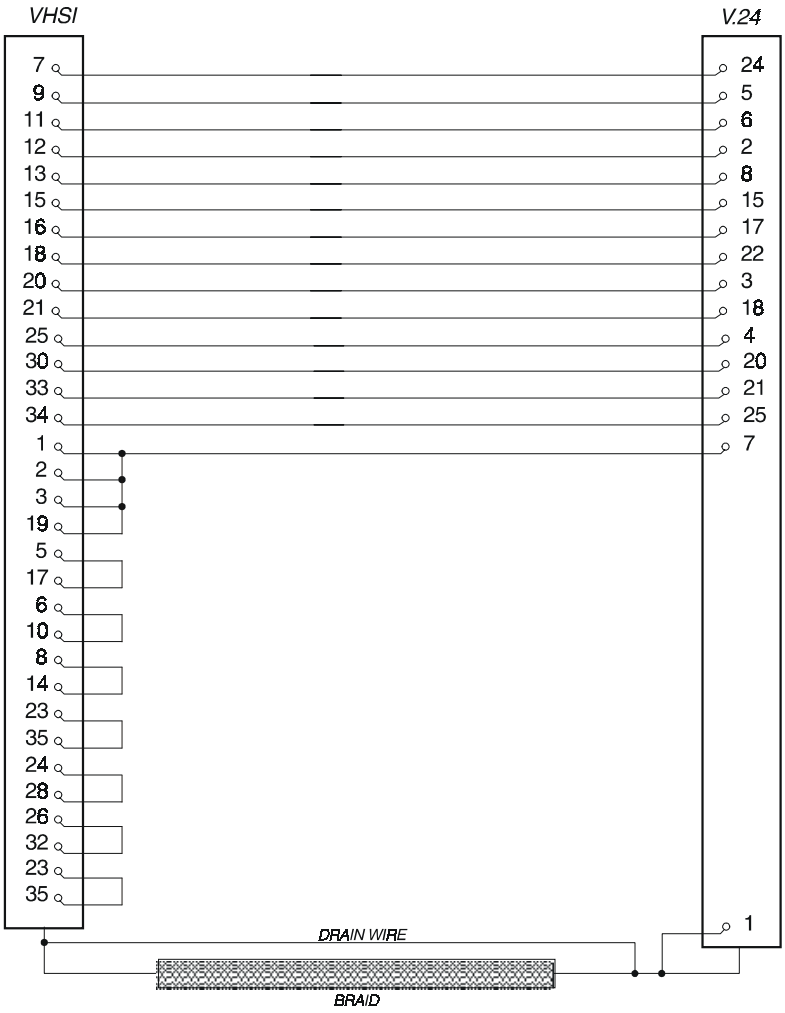
The V.24 Interface

The V.24 interface pin-out diagram and signal definitions and names are shown below.



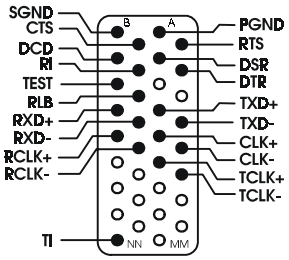
Pin #	Signal	Name	Direction	CCITT #
1	*PGND*	*Protective Ground*	*Common*	*101*
2	*TXD*	*Transmit Data*	*Output*	*103*
3	*RXD*	*Receive Data*	*Input*	*104*
4	*RTS*	*Request to Send*	*Output*	*105*
5	*CTS*	*Clear to Send*	*Input*	*106*
6	*DSR*	*Data Set Ready*	*Input*	*107*
7	*SGND*	*Signal Ground*	*Common*	*102*
8	*DCD*	*Data Carrier Detect*	*Input*	*109*
15	*TCLK*	*Transmit Clock (DCE)*	*Input*	*114*
17	*RCLK*	*Receive Clock*	*Input*	*115*
18	*TEST*	*Local Loopback Activation*	*Output*	*141*
20	*DTR*	*Data Terminal Ready*	*Output*	*108*
21	*RLB*	*Remote Loopback*	*Output*	*140*
22	*RI*	*Ring Indicator*	*Input*	*125*
24	*DTECLK*	*Transmit Clock (DTE)*	*Output*	*113*
25	*TI*	*Test Indicator*	*Input*	*142*

The wiring diagram below shows the connections required to construct a VHSI-V.24 cable.



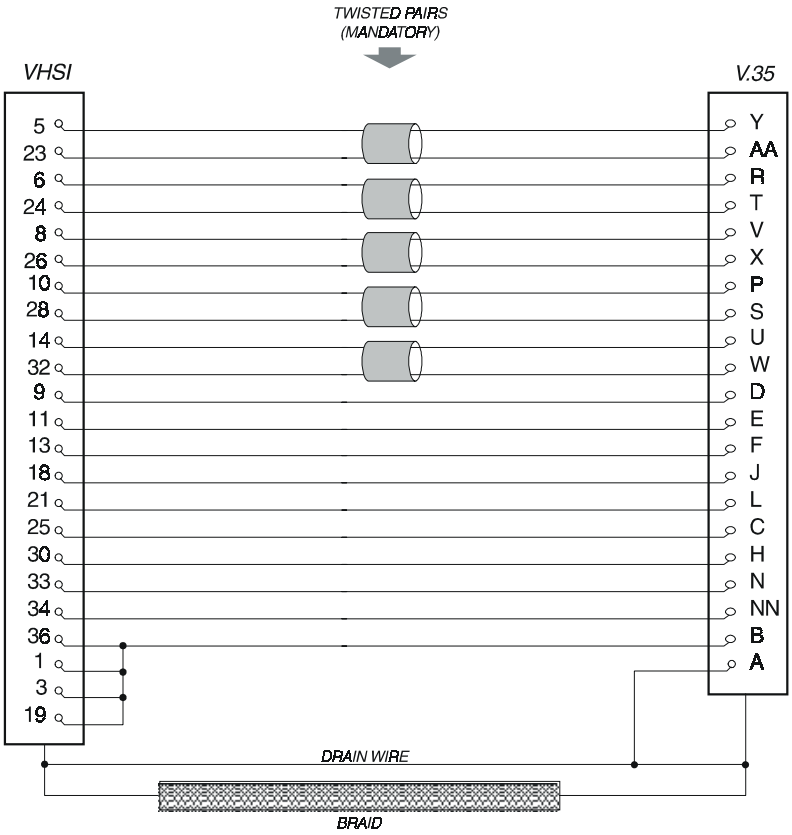
The V.35 Interface

The V.35 interface pin-out diagram and signal definitions and names are shown below.



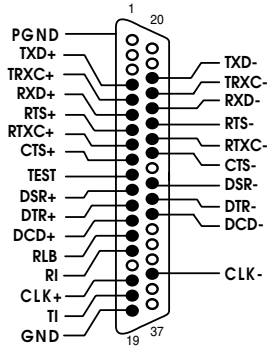
Pin #	Signal	Name	Direction	CCITT #
A	*PGND*	*Protective Ground*	*Common*	*101*
B	*SGND*	*Signal Ground*	*Common*	*102*
C	*RTS*	*Request to Send*	*Output*	*105*
D	*CTS*	*Clear to Send*	*Input*	*106*
E	*DSR*	*Data Set Ready*	*Input*	*107*
F	*DCD*	*Data Carrier Detect*	*Input*	*109*
H	*DTR*	*Data Terminal Ready*	*Output*	*108*
J	*RI*	*Ring Indicator*	*Input*	*125*
L	*TEST*	*Local Loopback Activation*	*Output*	*141*
N	*RLB*	*Remote Loopback*	*Output*	*140*
P	*TXD+*	*Transmit Data*	*Output*	*103A*
R	*RXD+*	*Receive Data*	*Input*	*104A*
S	*TXD-*	*Transmit Data*	*Output*	*103B*
T	*RXD-*	*Receive Data*	*Input*	*104B*
U	*CLK+*	*Transmit Clock (DTE)*	*Output*	*113A*
V	*RCLK+*	*Receive Clock (DCE)*	*Input*	*115A*
W	*CLK-*	*Transmit Clock (DTE)*	*Output*	*113B*
X	*RCLK-*	*Receive Clock (DCE)*	*Input*	*115B*
Y	*TCLK+*	*Transmit Clock (DCE)*	*Input*	*114A*
AA	*TCLK-*	*Transmit Clock (DCE)*	*Input*	*114B*
NN	*TI*	*Test Indicator*	*Input*	*142*

The wiring diagram below shows the connections required to construct a VHSI-V.35 cable.



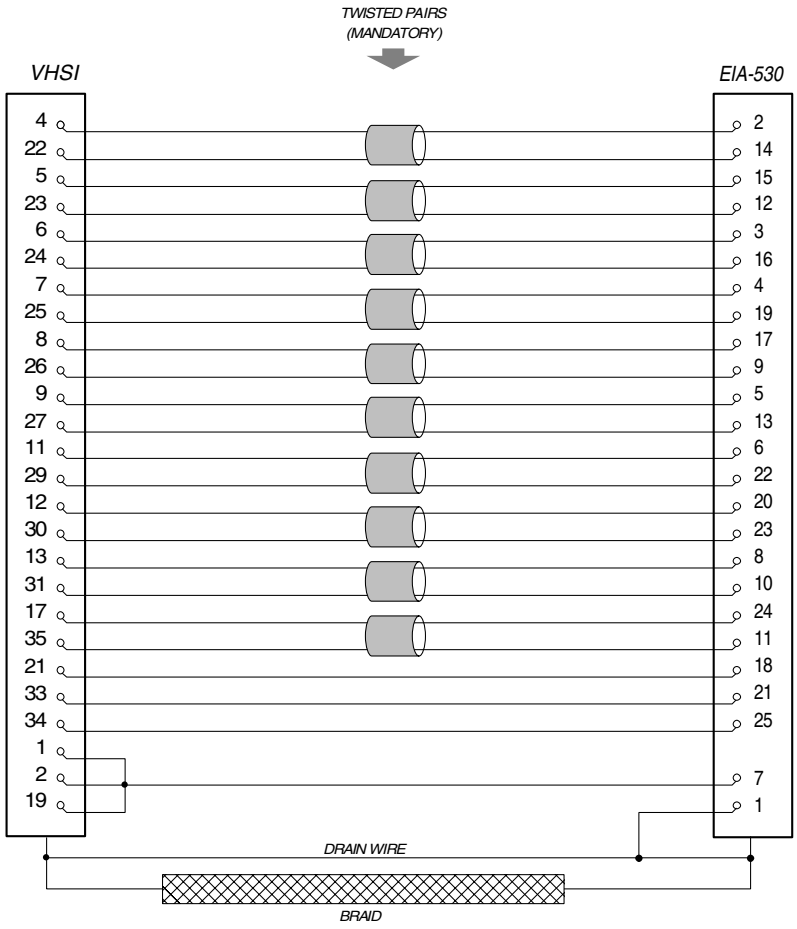
The EIA-530 Interface

The EIA-530 interface pin-out diagram and signal definitions and names are shown below.



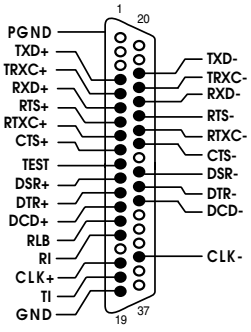
Pin #	Signal	Name	Direction	CCITT #	EIA
1	*PGND*	*Protective Ground*	*Common*	*101*	*-*
2	*TXD+*	*Transmit Data*	*Output*	*103A*	*BA(A)*
3	*RXD+*	*Receive Data*	*Input*	*104A*	*BB(A)*
4	*RTS+*	*Request to Send*	*Output*	*105A*	*CA(A)*
5	*CTS+*	*Clear to Send*	*Input*	*106A*	*CB(A)*
6	*DSR+*	*Data Set Ready*	*Input*	*107A*	*CC(A)*
7	*SGND*	*Signal Ground*	*Common*	*102B*	*AB*
8	*DCD+*	*Data Carrier Detect*	*Input*	*109A*	*CF(A)*
9	*RTXC-*	*Receive Clock (DCE)*	*Input*	*115B*	*DD(B)*
10	*DCD-*	*Data Carrier Detect*	*Input*	*109B*	*CF(B)*
11	*CLK-*	*Transmit Clock (DTE)*	*Output*	*113B*	*DA(B)*
12	*TRXC-*	*Transmit Clock (DCE)*	*Input*	*114B*	*DB(B)*
13	*CTS-*	*Clear to Send*	*Output*	*106B*	*CB(B)*
14	*TXD-*	*Transmit Data*	*Output*	*103B*	*BA(B)*
15	*TRXC+*	*Transmit Clock (DCE)*	*Input*	*114A*	*DB(A)*
16	*RXD-*	*Receive Data*	*Input*	*104B*	*BB(B)*
17	*RTXC+*	*Receive Clock (DCE)*	*Input*	*115A*	*DD(A)*
18	*TEST*	*Local Loopback Activation*	*Output*	*141A*	*LL*
19	*RTS-*	*Request to Send*	*Output*	*105B*	*CA(B)*
20	*DTR+*	*Data Terminal Ready*	*Output*	*108A*	*CD(A)*
21	*RLB*	*Remote Loopback*	*Output*	*140A*	*RL*
22	*DSR-*	*Data Set Ready*	*Input*	*107B*	*CC(B)*
23	*DTR-*	*Data Terminal Ready*	*Output*	*108B*	*CD(B)*
24	*CLK+*	*Transmit Clock (DTE)*	*Output*	*113A*	*DA(A)*
25	*TI*	*Test Indicator*	*Input*	*142A*	*TM*

The wiring diagram below shows the connections required to construct a VHSI-EIA-530 cable.



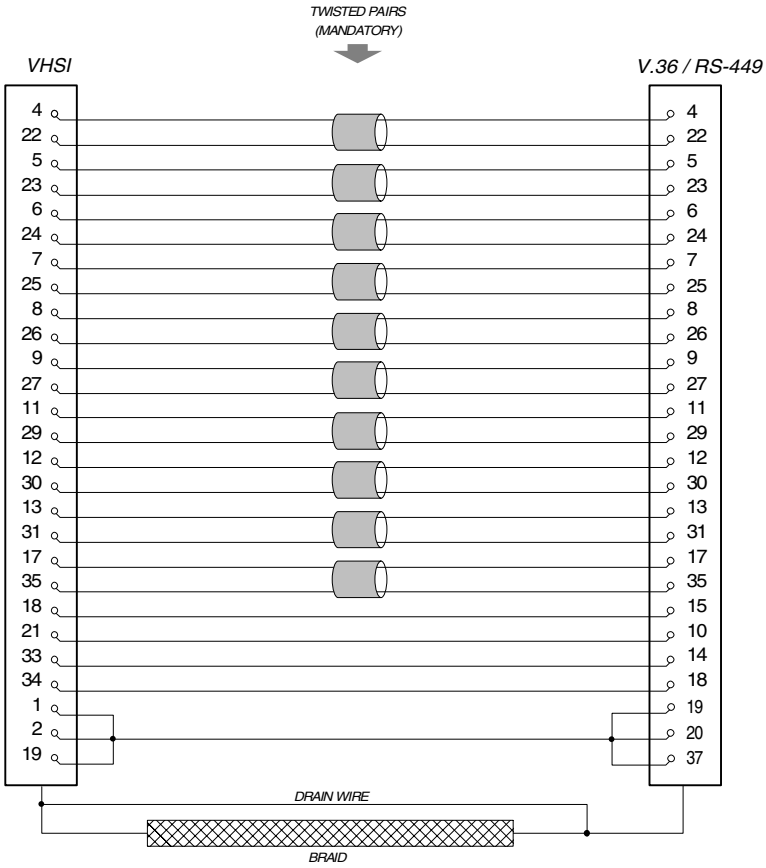
The V.36/RS-449 Interface

The V.36/RS-449 interface pin-out diagram and signal definitions and names are shown below.



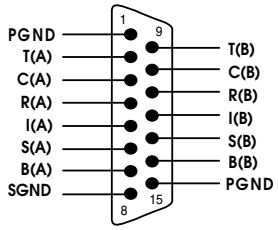
Pin #	Signal	Name	Direction	CCITT #
Case	*PGND*	*Protective Ground*	*Common*	*101*
4	*TXD+*	*Transmit Data*	*Output*	*103A*
5	*TRXC+*	*Transmit Clock (DCE)*	*Input*	*114A*
6	*RXD+*	*Receive Data*	*Input*	*104A*
7	*RTS+*	*Request to Send*	*Output*	*105A*
8	*RTXC+*	*Receive Clock (DCE)*	*Input*	*115A*
9	*CTS+*	*Clear to Send*	*Input*	*106A*
10	*TEST*	*Local Loopback Activation*	*Output*	*141A*
11	*DSR+*	*Data Set Ready*	*Input*	*107A*
12	*DTR+*	*Data Terminal Ready*	*Output*	*108A*
13	*DCD+*	*Data Carrier Detect*	*Input*	*109A*
14	*RLB*	*Remote Loopback*	*Output*	*140A*
15	*RI*	*Ring Indicator*	*Input*	*125A*
17	*CLK+*	*Transmit Clock (DTE)*	*Output*	*113A*
18	*TI*	*Test Indicator*	*Input*	*142A*
19	*GND*	*DTE Common Return*	*Common*	*102A/B*
22	*TXD-*	*Transmit Data*	*Output*	*103B*
23	*TRXC-*	*Transmit Clock (DCE)*	*Input*	*114B*
24	*RXD-*	*Receive Data*	*Input*	*104B*
25	*RTS-*	*Request to Send*	*Output*	*105B*
26	*RTXC-*	*Receive Clock (DCE)*	*Input*	*115B*
27	*CTS-*	*Clear to Send*	*Input*	*106B*
29	*DSR-*	*Data Set Ready*	*Input*	*107B*
30	*DTR-*	*Data Terminal Ready*	*Output*	*108B*
31	*DCD-*	*Data Carrier Detect*	*Input*	*109B*
35	*CLK-*	*Transmit Clock (DTE)*	*Output*	*113B*

The wiring diagram below shows the connections required to construct a VHSI-V.36 cable.



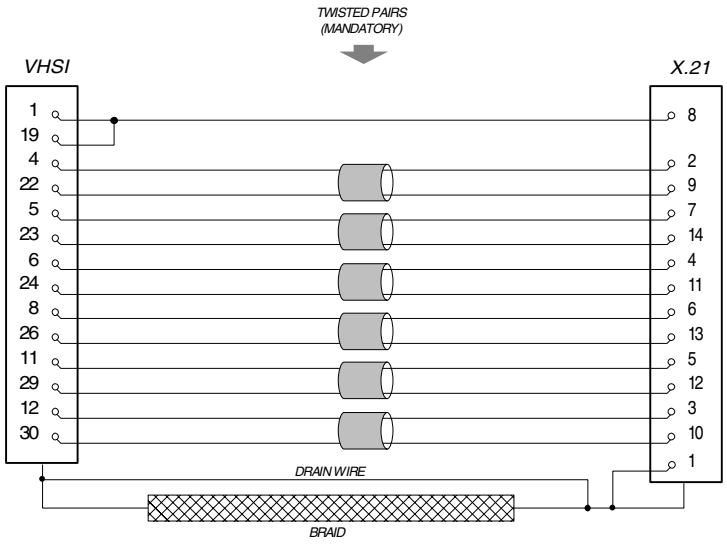
The X.21 Interface

The X.21 interface pin-out diagram and signal definitions and names are shown below.



Pin #	Signal	Name	Direction	CCITT #
1/15	*PGND*	*Protective Ground*	*Common*	*101*
2	*T(A)*	*Transmit Data (+)*	*Output*	*103A*
3	*C(A)*	*Control Signal (+)*	*Output*	*105A*
4	*R(A)*	*Receive Data (+)*	*Input*	*104A*
5	*I(A)*	*Indication (+)*	*Input*	*109A*
6	*S(A)*	*Signal Element Timing (+)*	*Input*	*115A*
7	*B(A)*	*Byte Timing (+)*	*Input*	*114A*
8	*SGND*	*Signal Ground*	*Common*	*102*
9	*T(B)*	*Transmit Data (-)*	*Output*	*103B*
10	*C(B)*	*Control Signal (-)*	*Output*	*105B*
11	*R(B)*	*Receive Data (-)*	*Input*	*104B*
12	*I(B)*	*Indication (-)*	*Input*	*109B*
13	*S(B)*	*Signal Element Timing (-)*	*Input*	*115B*
14	*B(B)*	*Byte Timing (-)*	*Input*	*114B*
1/15	*PGND*	*Protective Ground*	*Common*	*101*

The wiring diagram below shows the connections required to construct a VHSI-V.35 cable.



Configuration Worksheets

The following worksheets are available to help configure the Eicon 1550/1551 WAN Router.

X.25 Line Subscription Worksheet 143
Frame Relay Line Subscription Worksheet 145
PPP Worksheet 146
VHSI Port Worksheet 147
HDLC Worksheet 144
Dialer Parameters Worksheet — Direct Dialer 148
Dialer Parameters Worksheet — Hayes AT 149
Dialer Parameters Worksheet —V.25Bis 150

X.25 Line Subscription Worksheet

The following settings are available when configuring X.25.

Parameter	Options/Range	Default	Value
Node Type	DTE or DCE	DTE	
Local DTE address	1-15		
Default window size	1-7	2	
Maximum window size	1-7	7	
Packet format	Basic or extended	extended	
Default packet size	64-1024	128	
Maximum packet size	Default packet size to 1024	256	
X.25 version	1984 or 1988	1984	
Maximum retry count	0-99	3	
Permanent Virtual Circuits (PVCs)	Start, number	1,0	
Incoming Virtual circuits (IVCs)		2,0	
Two-Way Virtual Circuits (TVCs)		1,1	
Outgoing Virtual Circuits (OVCs)		1,0	
T20:	0-999	60	
T21:	0-999	60	
T22:	0-999	60	
T23	0-999	60	
Acknowledge	0-9999	20	

HDLC Worksheet

By definition, any connection using the X.25 protocol also uses HDLC at a lower level. The following settings are available when configuring HDLC.

Parameter	Options/Range	Default	Value
Maximum Frame Size (N1) HDLC only X.25 over HDLC	 1-8194 (X.25 Max Packet size+5)-1029	261 1504 144	
Maximum Window Size (K)	1-7, or 1-127	7	
Link Setup	Active, Passive	Active	
Sequence	Normal, Extended	Normal	
Maximum Retry Count	1-99	10	
Reject Frames	RR, RNR, REJ		
X.32 Services	ERIPAX, CCITT, TRANSPAC	None	

Parameter	Options/Range	Default	Value
Timers			
Check point T1	200-9999	2900	
Ack Delay T2	0-9999	200	
Idle Probe T3	0-99999	15000	

Frame Relay Line Subscription Worksheet

Obtain the following information from your Frame Relay network subscription. The information you obtain here is required when you configure a Frame Relay link.

Parameter	Options/Range	Default	Value
Local management interface	None LMI Annex A Annex D Auto LMI	Auto LMI	
Maximum number of DLCI (P1)	1-8	5	
Information field size (dN1)	19-4096	1514	
Full status polling cycle (N1)	1-255	6	
Error threshold (N2)	1-10	3	
Monitored events count (N3)	1-10	4	
Link integrity verification timer (T1)	5, 10, 15, 20, 25, 30	10	
Committed information rate	2400-204800	9600	

Parameter	Options/Range	Default	Value
Dynamic or Static DLCI			
Window size	1-255	12	

PPP Worksheet

The following settings are available when configuring PPP.

Connection Group

Parameter	Options/Range	Default	Value
Compressions	Ascend, MPPC, MS-STAC, STAC 1, STAC 3	Disabled	
Echo request	Enable, Disable	Enabled	
Idle timer	10-900,0 to disable	120	
Max retries	0-250	25	
Retry delay			
Restore delay		300	

IP Group

Parameter	Options/Range	Default	Value
Multicast enable	Enable, Disable	Enabled	
IP address		192.168.1.1	
Subnet mask		255.255.255.0	

RIP Group

Parameter	Options/Range	Default	Value
RIP version	Version 1, Version 2, V.2 compatible to V.1, Disable	V.2 compatible to V.1	
RIP policy	Silent, Periodic, ifConnected	Periodic	
Route merging	Enable, Disable	Disabled	

DNS Group

Parameter	Options/Range	Default	Value
Domain name			
Primary address	0.0.0.0.		
Secondary address	0.0.0.0.		

VHSI Port Worksheet

The following settings are available when configuring VHSI.

Parameter	Options/Range	Default	Value
Line Interface	Leased, Dial	Leased	
Duplex	Full, Half	Full	
Multidrop	Point-to-Point, Multi-Point	Point-to-Point	
Modem Interface	Autodetect, RS-232, V.24	Autodetect	
Data Encoding	NRZ, NRZI, DPLL, FMO, FM1	NRZ	
Clocking	EXTERNAL, INTERNAL, EXTDPLL, INTDPLL	EXTERNAL	
Line Speed	2400, 3600, 4800, 7200, 9600, 14400, 19200, 38400, 48000, 56000, 57600, 64000, 768000, 896000, 1000000, 1024000, 1152000, 1280000, 1408000, 1536000, 1544000, 1600000, 2048000	64000	
DCD (off) - > RTS (on) delay	0-9999	0	
RTS (on -> off) maximum delay	0-9999	0	
DCD (on-> off) maximum delay	0-9999	0	
Tx idle timeout (on-> off) maximum delay	0-9999	0	

Dialer Parameters Worksheet — Direct Dialer

The following settings are available when configuring Direct Dialer.

Parameter	Options/Range	Default	Value
RI (on) -> DTR (on)	0-9999	0	
DSR (on) -> RTS (on)	0-9999	0	
DSR debouncing	0-9999	100	
Max delay to establish connection	15000-6500	100	
DSR mode	Normal, Ignore	Normal	

Dialer Parameters Worksheet — Hayes AT

The following settings are available when configuring Hayes AT.

Parameter	Options/Range	Default	Value
Enable Answering	Enable, Disable	Enable	
Allow retry	Enable, Disable	Enable	
Retry limit	Range: 1-9	4	
Delay between retries	Range: 0-65	5	
Speed	1200-230400	115200	
Bits/Char	Values: 7 or 8	7	
Parity			
Primary Number	ATDT, ATDP		
Secondary Number	ATDT, ATDP		
Max delay to establish connection	15-65	30	
Hangup delay	0-65	2	
DSR (on->off) transition delay	0-65	2	
RI to DTR delay	0-30000	1000	
DSR loss delay	0-10000	1500	
Max delay between rings	1-9000	5000	
Min. DSR (on) state delay before going off hook	0-4000	2000	

Dialer Parameters Worksheet —V.25Bis

The following settings are available when configuring V.25Bis.

Parameter	Options/Range	Default	Value
Enable Answering	Enable, Disable	Enabled	
Allow retry	Enable, Disable	Enabled	
Retry limit	1-9	4	
Delay between retries	1-9	4	
Primary number	N,I,S		
Secondary number	N,I,S		
Max delay to establish connection	15-65	30	
Hangup delay	0-65	2	
DSR (on->off) transition delay	0-65	2	
RI to DTR delay	0-30000	1000	
DSR loss delay	0-10000	1500	
Max delay between rings	1-9000	5000	
Min. DSR (on) state delay before going off hook	0-4000	2000	
Send a command message delay	200-4000	200	

Regulatory and Warranty Information

General Information 152
Regulatory Information for the United States 153
Regulatory Information for Canada 155
Regulatory Information for Europe 156
Limited Warranty 157

General Information

Safety

For your safety, only trained and qualified personnel are permitted to open this device.

Power Consumption

Check that the power supply will not be overloaded. Maximum power consumption of the unit is stated in **Specifications** on page 9. The user must ensure that the total power drawn by the host computer, the Eicon 1550/1551, and any other peripherals, does not exceed the capability of the host power supply unit.

Regulatory Information for the United States

Warning: Changes or modifications to this unit not expressly approved by Eicon Networks Corporation could void the user's authority to operate the equipment.

FC Declaration of Conformity

We,

Eicon Networks Corporation
2155 Chenault Road
Suite 503
Carrollton, Texas
USA 75006
1-800-80-EICON
(972) 417-5500

Declare under our sole legal responsibility that the product to which this declaration relates, is in conformity with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Note: *This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.*

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- This unit may require shielded cables to comply with the FCC Class B emissions limits. Use of unshielded interface cables is prohibited.

Note: *ISDN and ADSL ports do not require shielded cables.*

Should you experience trouble with this equipment, please contact the address referenced above.

Safety Notice

Use certified class 2 power supply with this equipment.

Supplier's Declaration of Conformity

Manufacturer's Name:
Eicon Networks Corporation

Responsible Party Address:
2155 Chenault Road
Suite 503
Carrollton, Texas, USA 75006

Declares under his sole responsibility that the product:

Eicon 1551 WAN Router
Model: 800-719

Complies with the Federal Communications Commission's ("FCC") Rules and Regulations 47 CFR Part 68, and the Administrative Council on Terminal Attachments ("ACTA") adopted technical criteria.

An FCC compliant telephone cord and modular plug is provided with this equipment, designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68 compliant.

This equipment cannot be used on telephone company-provided coin service. Connection to party line service is subject to state tariffs.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this equipment, please contact us for repair and warranty information. If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved.

Should you experience trouble with this equipment, please contact our Customer Service Department at the address mentioned above.

Authorized Signature: PER

Gaetan Hogue - Approval Manager - Montreal
Eicon Networks Corporation

Montreal, September 10, 2001

Regulatory Information for Canada

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Warning: For your safety, follow these steps before you remove the cover from your PC:
1. Turn off the power to your PC and all peripheral devices.
2. Disconnect the power cable.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

For their own protection, users should ensure that any electrical ground connections of the power utility, telephone lines and internal metallic water pipe system are connected together. This precaution is particularly important in rural areas.

Warning: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Safety Notice

Use certified class 2 power supply with this equipment.

Regulatory Information for Europe

CE EU Declaration of Conformity

EN: Eicon Networks Corporation declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive1999/5/EC.

DE: Eicon Networks Corporation erklärt, daß diese Telekommunikations_endeinrichtung den grundlegenden Anforderungen und anderen relevanten Bestimmungen der Richtlinie 1999/5/EG entspricht.

DK: Eicon Networks Corporation erklærer, at dette udstyr er i overensstemmelse med vigtige krav og andre relevante provisioner i Direktiv 1999/5/EC.

ES: Eicon Networks Corporation declara que este equipo cumple con los requisitos esenciales y otras disposiciones pertinentes de la Directiva 1999/5/EC.

FI: Eicon Networks Corporation takaa, että tämä laite on 1999/5/EC-direktiivin olennaisten vaatimusten ja muiden lausekkeiden mukainen.

FR: Eicon Networks Corporation déclare que cet équipement répond aux exigences essentielles et autres dispositions pertinentes de la directive 1999/5/EC.

GR: Eicon Networks Corporation προβαίνει στην ανακοίνωση ότι αυτά τα μηχανήματα έχουν τις βασικές απαιτούμενες προδιαγραφές και υπόκεινται στις υπόλοιπες σχετικές διατάξεις της Οδηγητικής 1999/5/EC.

IC: Eicon Networks Corporation lýsir hér með yfir að þetta tæki uppfyllir grunnkröfur og tengd ákvæði ESB tilskipunar nr. 1999/5/EC.

IT: La Eicon Networks Corporation certifica che la presente apparecchiatura è conforme ai requisiti di legge stabiliti nella direttiva 1999/5/EC.

NL: Eicon Networks Corporation verklaart, dat deze uitrusting in overeenstemming is met de essentiële vereisten en andere relevante bepalingen van Richtlijn 1999/5/EC.

NO: Eicon Networks Corporation erklærer herved at dette utstyret oppfyller de vesentligste krav og relevante bestemmelser i direktiv 1999/5/EF om radio- og teleterminalutstyr.

PT: A Eicon Networks Corporation declara que este equipamento está de acordo com os requisitos básicos e outras provisões relevantes da Directiva 1999/5/EC.

SE: Eicon Networks Corporation förklarar att denna utrustning överensstämmer med de väsentliga krav och regler som finns i direktivet 1999/5/EG.

To receive a detailed R&TTE Declaration for this product please send a request specifying the product name to the following e-mail address: certification@eicon.com.

Limited Warranty

Eicon Networks Corporation warrants to the original purchaser of this Eicon Networks Corporation Product that it is to be in good working order for a period of five (5) years from the date of purchase from Eicon Networks Corporation or an authorized Eicon Networks Corporation dealer. Should this Product, in Eicon Networks Corporations' opinion, fail to be in good working order at any time during this five year warranty period, Eicon Networks Corporation will, at its option, repair or replace this Product at no additional charge except as set forth below. Repair parts and replacement Products will be furnished on an exchange basis and will be either reconditioned or new. This Limited Warranty does not include service to repair damage to the Product resulting from accident, disaster, misuse, abuse, or non-authorized alterations, modifications, and/or repairs.

Products requiring Limited Warranty service during the warranty period should be delivered to Eicon Networks Corporation with proof of purchase. If the delivery is by mail, you agree to insure the Product or assume the risk of loss or damage in transit. You also agree to prepay shipping charges to Eicon Networks Corporation and to use the original shipping container or equivalent.

EICON NETWORKS CORPORATION HEREBY DISCLAIMS ALL OTHER EXPRESSED AND IMPLIED WARRANTIES FOR THIS PRODUCT INCLUDING, BUT NOT LIMITED TO, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow the exclusion of implied warranties, so the above limitations may not apply to you.

IN NO EVENT WILL EICON NETWORKS CORPORATION BE LIABLE IN ANY WAY TO THE USER FOR DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, SUCH PRODUCT. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages for consumer products, so the above limitations or exclusions may not apply to you.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM ONE JURISDICTION TO ANOTHER.

This Limited Warranty applies to hardware products only.